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ORIGINAL ARTICLES.

CASES ILLUSTRATING THE THERAPEUTIC USES OF THE ROENTGEN RAYS.*

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THE value of the X-ray as an aid to surgery, great as it is, was easily discernible the moment Roentgen announced his discovery; but the value of the X-ray as a remedial agent in the treatment of disease was at the time little suspected and was to be determined only through time and experience.

It is the purpose of this paper to set before you some of the results of my experience with the X-ray in the treatment of various forms of disease, and particularly of malignant lesions of the skin. The cases here reported represent the average results that I have obtained.

Case I.—Mrs. H., aged forty-five years. Referred by Dr. C. A. Powers. Epithelioma of the external surface of right ala of nose. First appeared in 1892, since which time various treatments have been employed, such as caustic plasters, pastes, curetting and cauterization. Temporary healing followed some of the treatments, but a recurrence took place within a comparatively short space of time. When the case came under my observation, April 25, 1902, there was an ulcer

Fig. 1.

on an indurated base involving the external surface of the right ala of the nose and dipping down into the nostril. The area surrounding the ulcer was very much congested, giving a particularly angry appearance to the entire surface. A heavy crust or scab covered the ulcer. This condition had been developing for two years.

X-ray exposures commenced April 26, 1902, and continued until June 17, when the entire area was healed and has continued so to the present time. Forty-two treatments were given.

Case II.—Mr. R., aged sixty-one years. Referred by Dr. P. V. Carlin. Epithelioma of the

Fig. 2.

external surface of the right ala of the nose. Transverse diameter of ulcer two cm., vertical 1.5 cm. Growth first appeared in 1890. Was excised by one of the prominent surgeons of Chicago in 1894; reappeared in 1897 and gradually extended to the size shown by Fig. 1. X-ray treatment commenced May 19, 1902, and continued to June 23. After 30 exposures, a firm scab covered the ulcer. The scab came off July 22, leaving the underlying surface perfectly healed as shown in Fig. 2.

Case III.—Miss R., aged twenty-four years. Referred by Dr. C. A. Graham. Lupus erythematosus. Area involved: the bridge of nose, tip of nose and upper lip in median line near juncture of mucous membrane. History of five years' duration in which time many different remedies were ineffectually tried. Family history: mother died of tuberculosis, one sister has scrofula, and one brother is below par in intellectual ability. X-ray treatment of nose commenced May 15. May 30, scab came from bridge of nose, leaving healthy, pink skin beneath. First exposure given to the lip May 20. June 10, the three areas just mentioned were covered by healthy skin. The bridge of the nose had eight exposures, the tip 10 and the lip eight. Entire period covered by treatment, May 15 to June 2.

Case IV.—Mrs. M., aged sixty-five years. Referred by Dr. G. B. Packard. Epithelioma of right cheek. Lesion was first noticed one year ago. An ulcer soon developed. This healed under treatment, but reappeared in July, 1902, and persisted in spite of treatment until the case came under my observation August 27. At that date

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there was present below and internal to the malar prominence an ulcer about one cm. in diameter situated upon an inflamed, indurated base. A

Fig. 3.

thick crust covered the ulcer. This condition is shown in Fig. 3. Treatment was begun August 27 and continued until September 8. Eleven exposures were given which established the healing process, and the improvement continued without

Fig. 4.

interruption. The scab came away September 28, leaving the area entirely healed. Present condition is shown by Fig. 4.

Case V.—Mrs. F., aged thirty-five years. Referred by Dr. S. G. Bonney. Tuberculous glands of right side of neck. The glands at the posterior border of the sterno-mastoid in the upper half of neck were much enlarged and a mass composed of two or three glands matted together projected very prominently below and behind the lobe of the ear. The chain in front of the trapezius was also enlarged. This condition of the glands had persisted for six years, slight variations in the size taking place according to the general health of the patient. X-ray treatments commenced May 2. The glands in the upper part of the neck received 24 exposures and the lower chain in front of the trapezius received 16. Treatment was discontinued June 16, as the patient left the city for the summer. She was examined by Dr. Bonney on this date, who reported a diminution of the size of the glands of at least one half. During the summer the glands have continued to subside and at this date, nearly four months after cessation of treatment, are scarcely perceptible.

Case VI.—Mr. G., aged sixty-three years. Referred by Dr. J. M. Foster. Lupus erythematosus. A number of reddish brown, discrete patches from one-half to two cm. in diameter with dry adherent scales, involved the skin from the temporal region to the lower border of the superior maxilla on either side. The skin of the nose and ears was similarly affected. Extending outward from the malar prominence on each side were a number of discrete, pearly scars, marking the sites of former lesions. This affection had persisted since 1890, and during the greater part of the time the best known methods of treatment had been employed. X-ray exposures were commenced June 28 and continued to August 26. During this time 53 treatments were given. One area after another received each from 16 to 18 exposures. The patient left the city August 26, at which time the area first exposed was smooth and free from patches. On his return September 25, all the areas that had been treated were smooth and the skin presented a healthy appearance with the exception of the scars above mentioned. There has been no sign of recurrence in the healed regions. There are a few spots that I have not exposed to the rays. I shall follow out the same treatment with these and expect a complete recovery.

Case VII.—Mrs. A., aged forty-nine years. Referred by Dr. C. A. Powers. Secondary carcinoma of spine with recurrent nodules in right breast area. A complete Halsted operation for far advanced medullary cancer of right breast and axillary contents had been performed five months previously and the highest subclavicular glands were found upon microscopic examination to be malignant. Pain developed in the lower dorsal region and became most intense, so that the position of the patient in bed could not be changed without causing great suffering. Morphine gave some relief, but its use was unsatisfactory, as it gave rise to unpleasant symptoms. X-ray treatments commenced April 19. Daily exposures were given to the lower dorsal and upper lumbar regions, and on April 28, after nine treatments, the spinal pain entirely disappeared and the patient remained free from it during the subsequent course of the disease. Severe intercostal pains came on at a later stage, and these also yielded to the influence of the rays. Nodules varying in diameter from three to eight mm. had developed about the scar area within a brief space of time and nearly encircled it. Under continued treatment the entire area became softer. Some of the nodules disappeared and the growth of the remaining ones was checked. Cachexia became well marked in the case and a fatal termination took place about the middle of July. The X-rays proved of the utmost comfort to the patient and enabled her to pass the last two months of life free from the intense suffering which generally accompanies spinal carcinoma.

Case VIII.—Mrs. A., aged seventy-seven years. Referred by Dr. P. V. Carlin. Epithelioma of the cheek. Four years ago the growth appeared in the form of little hard warts beneath the left eye. These increased in size but occasioned no particular discomfort until one year ago when they be-

gan to grow rapidly and coalesced into a prominent mass situated upon an inflamed areola. When she was referred to me this mass was about two cm. in diameter and hard on the edges, but broken down in the center, the ulcer being covered with a crust. This condition is shown in Fig. 5.

Fig. 5.

There was also present under the right eye a scaly patch one cm. in longest diameter. An operation for the removal of the growth had been advised, but the patient would not consent to any surgical procedure.

X-ray treatment commenced July 31, and up to the present time 26 exposures have been given. The present condition is shown in Fig. 6. This

Fig. 6.

case is still under treatment, but the areas are so nearly healed that I feel warranted in expecting a complete recovery.

Case IX.—While observing the work done with the X-rays by some of the leading men in Chicago last April, I was greatly impressed with the confidence expressed in the ability of the rays to benefit pulmonary tuberculosis. As I had been able to produce beneficial effects by the rays upon tuberculous glands, I determined to try them upon the first favorable case of tuberculous lung infection that presented itself. The case is as follows: Mrs. S., aged thirty-nine years. Pulmonary tuberculosis. Family history negative. Disease contracted in Chicago in the spring of 1901. Patient came to Denver shortly after. Has been under the care of one of our leading specialists the greater part of the time. Consulted me May 24, 1902, about a year after her arrival in Colorado. Was coughing and expectorating freely in the morning and after each meal. Tubercle bacilli were present in the sputum. Weight about normal. No elevation of temperature was detected. Both apices were affected. The left was consolidated to the second rib. Anteriorly prolonged expiration and bronchial breathing were present in this area and moist râles could be plainly heard below the clavicle, especially numerous near its juncture with the sternum. Moist râles were detected posteriorly at the superior angle of the scapula in both the right and left lung. X-ray exposures were commenced May 24, and from that time to September 26, 76 treatments were given. The chest and back were exposed on alternate days, and the rays had sufficient penetration to make the contents of the thorax plainly visible on the fluoroscopic screen. By August 6, nine weeks after the exposures were commenced, expectoration had entirely ceased and there has been no recurrence of it. The signs of moisture had disappeared from the lungs September 26. The consolidation and bronchial breathing were still present. Realizing that it is impossible to draw conclusions of value from one case of pulmonary tuberculosis, I submit this case for what it is worth.

Case X.—Miss C., aged twenty-six years. Lupus erythematosus. Area affected: end of nose, right cheek (size of half-dollar) and upper lip below nostril, the latter patch one-half cm. in diameter. Disease appeared in 1897 on the tip of nose and in 1900 on the cheek. Family history negative, except that mother's sister died of tuberculosis. Electric needle treatment and caustic plasters had produced some improvement in the areas. Patient came to me June 21, at which time the areas above mentioned were much reddened and the patch on the lip was covered with a fine, whitish scale. A number of whitish scars were present in the cheek area. Thirty-one exposures were given, last treatment July 22. Present condition: the redness has entirely disappeared, and the skin with the exception of the scars above mentioned has assumed a normal appearance.

Case XI.—Mrs. G., aged sixty years. Primary epithelioma of lower lip. Growth appeared one year ago and gradually increased in size. There was an ulcerated cauliflower excrescence of the mucous membrane of the right half of the

Fig. 7.

lower lip, extending from the junction of the skin and mucous membrane well inside the mouth. The base of growth was much indurated, the induration extending over the entire half of the lip. This condition is well shown in Fig. 7. Excision of the growth had been advised, but the patient declined surgical interference. X-ray

treatment commenced August 22 and continued daily until September 7. Sixteen exposures were given. Improvement has been very rapid, as shown in Fig. 8. There is still some slight in-

Fig. 8.

duration present, which, however, is gradually lessening. The ulcer has entirely disappeared.

Case XII.—Mr. S., aged fifty-four years. Chronic eczema of 12 years' duration. Perineum and adjoining area of left thigh were involved. Skin was much thickened, roughened, scaly and particularly leathery to the touch. Six or eight red papules were present, also excoriations made by scratching with finger nails. Most intense itching at night. Patient had consulted many doctors and tried many remedies with only temporary relief, a few hours being the longest time the patient had been free from the itching during the entire twelve years. X-rays exposures commenced July 1, and six treatments were given to July 8. Patient then went on a fishing trip and reported again July 18. From the 8th of July there had been no itching sensation present. A treatment was given July 18 and one more July 19, making in all a total of eight treatments. The papules, excoriations and roughness had all disappeared by this date. The skin was much softer and had a normal appearance. There has been no recurrence of the trouble in any form.

Case XIII.—Mr. E., aged thirty-three years. Referred by Dr. S. G. Bonney. Hodgkin's disease. In November, 1897, the patient first noticed a small enlargement of a gland above the clavicle of left side. Other glands soon enlarged in the same locality and became matted together into a large mass. Synchronously with this occurred an enlargement of the glands in the axillæ and groins. The spleen became much enlarged. Leukemia was well marked. An examination of the blood by Dr. Bergtold, December 15, 1897, showed 4,310,700 red corpuscles, 14,000 white and hemoglobin 64 per cent. Patient had lost 20 pounds from his normal weight of 135 pounds. A daily rise of temperature was present, ranging from 99.8° to 103° F. General weakness was a prominent symptom. A tuberculin test was made but proved negative. The glands were rapidly increasing in size. Under the treatment of Dr. Bonney the patient began to gain weight and strength. His temperature became normal. The spleen and all the enlarged glands decreased in size. By spring of 1898 he had gained in weight up to 139 pounds. In the fall of 1898 there was a recurrence of many of the original symptoms—loss of weight, rise in temperature, general weakness and exhaustion—so that in the spring of 1899 he was confined to his bed for nine or ten weeks. Another blood examination was made at this time with practically the same results as stated above. Improvement took place again during the summer but in the fall there was a recurrence of the old symptoms. Patient was in bed for 10 weeks in the spring of 1900, with a daily rise in temperature; began to gain in the summer and had no recurrence of the trouble until July, 1901, when he began to lose weight, temperature ranged from 99° to 101° F., and this condition continued until May, 1902, when his weight had dropped from 132 to 111 pounds. During this time the glands in the upper part of the left side of neck became enlarged and when he consulted me, June 19, the posterior triangle of the left side of neck was filled with a mass of glands matted together, extending from the mastoid process to the clavicle, and there was a prominent mass in front of the sterno-mastoid, just beneath the angle of the jaw. His weight was 117 pounds. Glands in axillæ normal. Those in the groin could be felt but were not much enlarged. Spleen about normal in size. Skin on the lower border of neck, as well as of the entire chest, back and abdomen were bronzed, the abdomen being particularly dark. X-ray treatment commenced June 19, and from that time to the present patient has had 60 exposures. The first change noticeable in the glands was a breaking up of the masses so that the separate glands could be felt. This condition was manifest about the middle of July and has become more pronounced since, until at present it is possible to map out nearly every separate gland.

The measurements of the neck, which were taken by Dr. Bergtold, are as follows:

	Below Jaw. Inches.	At Cricoid. Inches.	Clavicle. Inches.
July 9	13¾	13	15¼
Aug. 11	13	12¾	14¼
Sept. 25	12¼	12½	13½
Oct. 6	12½	12½	13

This shows a diminution of the circumference of the neck:

below jaw of.....1¼ inches.
at cricoid of..... ½ inch.
at clavicle of.....2¼ inches.

The case is still under treatment.

Case XIV.—Mr. B., aged sixty-four years. Referred by Dr. W. A. Pusey of Chicago and Dr. J. M. Foster of Denver. Epithelioma involving the area over the left zygoma and inner aspect of the tragus of left ear. Area ulcerated and covered with crusts. Twenty-five centimeters above and outside the external angular process of the orbit is a scar area of the size of a quarter surrounded by small hard nodules. Patient first noticed trouble in 1896, and since then has been

treated by competent physicians in this city and elsewhere, but the affected area has never been entirely healed. Eighteen exposures were given by Dr. Pusey, who referred him to me May 29 for a continuation of the X-ray treatment. I gave nine exposures to the ulcerated surface, and by June 11 this area was smooth and completely healed. The nodular area received 31 exposures covering the time to July 15. At this date the nodules had entirely disappeared and the surface has since remained perfectly smooth. August 1 two suspicious spots, covered with a crust appeared over the zygoma and one on the tragus of the ear. As these spots did not show a tendency to heal spontaneously, this area was exposed to the rays a second time. Sixteen exposures were given up to September 2. Shortly after this date this area healed completely and remains so at present.

This closes the series of cases that I purposed to describe to you this evening. It includes six cases of epithelioma, one of carcinoma, three of lupus erythematosus, one of chronic eczema, one of tubercular glands, one of tuberculosis pulmonalis and one of Hodgkin's disease. From the report it is manifest that the especial province of X-ray therapy is in the treatment of diseases that have annoyed and baffled the practitioner from time immemorial. One estimable feature of X-ray therapy is that no pain is caused by it, and the patient arises from the application unaware for the time that any action has been wrought.

The X-ray is not a panacea, but let us hope that its power for good as a remedial agent has only begun to reveal itself.

SUBPHRENIC ABSCESS AS A COMPLICATION OF APPENDICITIS.*

BY

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IN a study of 4,028 autopsies collected from the following sources,

The Boston City Hospital, Boston, Mass., Jan. 1, 1896, to Aug. 14, 1902 . . .	1,890
The Johns Hopkins Hospital, Baltimore, Md., May 28, 1889, to Aug. 13, 1902 .	1,978
The Rhode Island Hospital, Providence, R. I., July 1, 1900, to July 1, 1902 . .	160
	4,028

death was found to be due directly or indirectly to acute appendicitis in 86. Of these 86 cases, 7, or 8.13 per cent. showed an involvement of the subphrenic region in a purulent process, and though in a strict sense of the word not each one of these was a case of subphrenic abscess, yet a review of them may be of use in illustrating the manner of formation and comparative frequence of subphrenic abscess secondary to appendicitis.

*Contributed to Vol. XIII of the Medical and Surgical Reports of the Boston City Hospital.

Since the classical publication of v. Leyden (Ueber Pyopneumothorax subphrenicus, Zeitschr. für klin. Med., I, 1880, 320), much interest has been attached to the subject of subphrenic abscesses in their various forms. They may occur in either subphrenic space. If in the right, they will be bounded above by the diaphragm, below by the liver, to the left by the suspensory ligament of the liver (Ligamentum suspensorium hepatis) and elsewhere by the abdominal parietes. If they occupy the left subphrenic space, to these boundaries will be added below, the stomach and spleen, but this space is not so sharply circumscribed as the right. Between the two, the suspensory ligament of the liver forms a barrier, which prevents, as a rule, the abscess from being bilateral. However, the ligament may be eroded and the process extend from one side to the other. Very exceptionally the process has extended from one side to the other behind the liver in front of the vertebral column, or abscesses have originated simultaneously on the two sides, so that the entire subphrenic space is occupied by purulent material, but separated into two portions by the intact suspensory ligament.

The origin of these abscesses is very various. Those on the right side more commonly arise by direct extension of an inflammatory process from the liver, from appendicular and periappendicular lesions, from perforation of the duodenum, and more rarely of the stomach; on the left side perforation of the stomach is the most frequent cause. Of the total number of cases, the cause, according to Nothnagel (Spec. Path. u. Therapie, Wien, 1898, XVII, 718), lies perhaps most often in a round ulcer of the stomach. Other etiological factors are inflammatory conditions of the kidneys, gall bladder and ducts, echinococcus of the liver and extension of an inflammatory process from the thoracic wall or contents. These abscesses may contain only purulent material (abscess subphrenicus) or purulent material mixed with gas (pyopneumothorax subphrenicus of v. Leyden). The gas comes either from perforation of some air containing viscus, or is produced *in situ* by the bacterial flora present, either the *Bacillus aerogenes capsulatus* (Welch) or some one of the *Bacillus coli communis* group. This last form may occur as a complication of appendicitis, as in a case reported by Umber (Pyopneumothorax subphrenicus (Leyden) auf perityphlitischer Basis ohne Perforation, Mittheil. a. d. Grenzgeb. d. Med. u. Chir., VI, 1900, 605). These two forms are often separated, since the latter presents a very distinct clinical picture, but etiologically and anatomically they are the same.

Subphrenic abscess is not a very common disease. Maydl in his monograph (Ueber subphrenische Abscesse, Wien, 1894) collected 179 cases. Lang (Ueber subphrenische Abscesse, Diss., Moscow, ref. Jahresbericht der gesammt. Med. II, 1895, 353) collected 173, and added three new cases. Yet, judging from its frequency following appendicitis, subphrenic abscess

is a much more common affection than the above figures seem to indicate. Furthermore, during the past two years, among 410 autopsies at the Boston City Hospital, there have been six cases of subphrenic abscess, exclusive of those following appendicitis. Of these, three were right-sided and three were left. The former followed a perforated gastric ulcer, acute suppurative cholecystitis, and typhoid respectively; the latter pyothorax, cholelithiasis with suppurative cholangitis but no liver abscess, and acute hemorrhagic pancreatitis. In two of the cases the diaphragm showed gross perforation.

Of Maydl's 179 cases, 23 were secondary to appendicitis. Lang found 26 due to appendicitis among 176 cases of right-sided subphrenic disease. Sachs (Archiv f. klin. Chir., I, 16) reported 41 cases in which he included 25 of Madyl's cases, but two of these should have been excluded, because the primary source lay in a perforation of the cecum by a foreign body. Weber (Deutsch. Zeitsch. f. Chir., LIV, 1900, 423) reports nine cases from 600 cases of appendicitis operated on by Sonnenburg. Of these 600 cases 350 had a periappendicular abscess, so the nine cases of subphrenic abscess form 2½ per cent. of the abscess cases. To these, in a later paper, Weber (Deutsch. Zeitsch. f. Chir., LX, 1901, 127) has added five cases from Sonnenburg's clinic. Elsberg (Annals of Surgery, XXXIV, 1901, 729) has operated on two cases of subphrenic abscess among 91 cases of appendicular disease, and from medical literature has been able to collect 71 cases of subphrenic abscess complicating appendicitis, making, with his two, a total of 73 cases. In doing this he excluded a number of cases, because the reports were meager and incomplete. Since the date of his publication single cases have been reported by Blake (Annals of Surgery, XXXIV, 1901, 703), Gaston (Med. Record, LIX, 1901, 452), Robinson (Lancet, 1899, I, 209), Dale (Cincinnati Lancet-Clinic, XLVI, 1901, 451), Caley (Lancet, 1900, I, 378), and others.

With Weber's 2½ per cent. of 350 operated abscess cases, Elsberg's two cases in 91 consecutive appendicitis operations, and the frequency with which we have found at autopsy an inflammatory condition in the subphrenic region, the conclusion seems justified that subphrenic abscess is not a very unusual complication of appendicitis, but that these cases have not, as a rule, been reported.

As these seven cases present a number of differences and several points of interst, those parts of the autopsy protocols relating to the appendix and the peritoneal and pleural cavities will be given in some detail.

Case I.—B. C. H., 98.247. J. H., male, age twenty-six. Anatomical Diagnosis.—Scar of former appendix operation; acute fibrinous general peritonitis; chronic adhesive localized peritonitis; retrocecal perisplenic and subphrenic abscesses; right pyothorax; acute serofibrinous pleuritis, left side; complete atelectasis, right lung; partial atelectatis, left lung; acute bronchitis; acute purulent mediastinitis; volvulus of small intestine; thrombosis of vessels of liver.

In the right groin is a scar 4½ cm. in length running parallel to Poupart's ligament, which is dark bluish in color, and slightly depressed below the surrounding skin (operation six months ago for appendicitis).

Peritoneal Cavity.—On opening the abdomen the coils of the small intestines present, are very greatly distended, hyperemic, and covered with thin flakes of fibrin. The coils of intestine are united by easily broken fibrinous adhesions. In the region of the appendix and cecum are numerous firm fibrous adhesions, in the meshes of which the appendix, with obliterated lumen, is found. The diameter of the appendix is much decreased. Posterior to the cecum is found an abscess cavity, containing a considerable amount of thick, creamy pus. The spleen is walled off from the general cavity by firm adhesions, and lies in a mass of the same thick, creamy pus. This pus is very adherent to the capsule of the spleen, and is only scraped off with some difficulty. The right lobe of the liver is bound to the diaphragm by recent adhesions. On separating these there is found to be a layer of the same thick, creamy pus lying between the liver and the diaphragm on the right side. Immediately over the left lobe of the liver there are fresh adhesions, but no pus. On examining the small intestine, 120 cm. above the ileocecal valve a complete twist of the intestine is found. All of the small intestine below this point and the large intestine is collapsed.

Pleural Cavities.—The right pleural cavity contains 1,800 c.c. of thick, creamy pus. The pleura is thickened and covered with soft yellowish fibrin flakes. The left pleural cavity contains 800 c.c. of a dark reddish fluid in which are numerous large flakes of fibrin. The fluid here is not purulent. The parietal pleura is partially adherent, showing the same appearance as the right, and in addition there are numerous small hemorrhages beneath it.

Lungs.—Right lung occupies a position close to the spinal column, is flattened, adherent by its apex to upper chest wall, slate-colored, and covered by numerous thick yellowish soft fibrin flakes. The lung is exceedingly heavy and flabby. On section it cuts with difficulty, is completely airless and can be readily moulded into almost any shape. Bronchi injected, and contain considerable muco-pus. Left lung shows the same condition of its pleura, and along the backs of the upper and middle lobe is the same condition as in the right lung, but the inner and anterior portions of the lung still contain air, are rather soft, pinkish yellow in color, and cushiony. Bronchial glands are enlarged and pigmented.

Diaphragm.—Both sides covered with an exudate of fibrin. No perforation present.

Cultures.—Heart's blood—*Streptococcus pyogenes.* Spleen—*Streptococcus pyogenes, Micrococcus lanceolatus,* and *Bacillus coli com-*

munis. Kidney—Sterile. Right pleural cavity —*Streptococcus pyogenes, Micrococcus lanceolatus.* Subphrenic abscess—*Streptococcus pyogenes* in almost pure culture.

Case II.—B. C. H., 00.115. E. A., female, age thirty-three. Anatomical Diagnosis.—Periappendicular, pelvic, and subphrenic abscesses; chronic localized adhesive peritonitis; acute fibrino-purulent pleuritis, right side; atelectasis, right lung; operation wounds.

In the right iliac region there is a healed scar 7 cm. long. In this same region, external to above scar, there is an incision 7 cm. long which enters the peritoneal cavity at the right side of the cecum, and through it a gauze drain passes into the region of the appendix.

Peritoneal Cavity.—The surface of the general peritoneum is smooth, glistening and dry. The region of the appendix and the end of the cecum are surrounded by slight adhesions and bloody diffluent material. The point of origin of the appendix is difficult to find, and its stump is apparently perfectly healed. The pelvis is walled off by rather strong adhesions involving omentum, small intestine, sigmoid flexure and apex of the bladder. On separating these the pelvis is found to be filled with dirty pus-like material. No direct connection between this and the condition about the appendix was to be made out. Between the diaphragm and the right lobe of the liver there is a small amount of dirty pus-like material. This communicates with the exterior by means of a wound passing through the base of the right pleural cavity.

Pleural Cavities.—The left pleural cavity is normal. The anterior part of the right pleural cavity is also normal. The lateral and posterior parts of the right cavity from base to apex and the right half of the base are walled off by rather firm fibrinous adhesions, and filled with 700 c.c. of fibrino-purulent exudate. The pleural walls are here covered by thick layers of fibrin. This cavity communicates with the exterior by above-mentioned incision.

Lungs.—Left lung pink, downy and appears normal. Right lung in the posterior and apical portions is normal. In the other portions it is covered with fibrinous exudate. Its tissue is soft and spleen-like in appearance. A bit of this sinks in water.

Cultures.—Heart, Spleen, Liver, Kidneys, Lungs, Pleuræ and Peritoneum—*Bacillus coli communis.*

Case III.—B. C. H., 01.110. H. B., male, age thirty-five. Anatomical Diagnosis.—Operation wounds; appendectomy; acute fibrinous general peritonitis; mesenteric and portal pyophlebitis; multiple abscesses of liver; acute splenic tumor present.

Skin generally has a slight icteric tint and conjunctivæ are distinctly yellow. In the median line is an incision through the abdominal wall 8 cm. in length, beginning 1 cm. above the umbilicus and extending to within 3 cm. of xyphoid cartilage. In the right lower quadrant of the abdomen is an "appendix" incision 4 cm. in length. Both wounds are closed by sutures.

Peritoneal Cavity.—Peritoneal surface is lusterless. All the coils of bowel are slightly adherent by easily broken fibrinous shreds. In the cavity of the pelvis is a small amount of serosanguinous fluid. In the region of the appendix, the appendix stump is found, and on pressure nothing escapes from the lumen of the cecum. Between the spleen, stomach, left side of diaphragm, liver and posterior wall of peritoneal cavity is an abscess containing offensive, yellowish, semi-fluid, purulent material. Its wall is everywhere covered by a fibrinous membrane, about 1 cm. in thickness, which is readily detached. Smears from pus in the subphrenic abscess show flattened streptococci. Mesenteric lymph nodes all somewhat enlarged.

Pleural Cavity.—Left pleural cavity is normal. Right pleural cavity is obliterated by old fibrous adhesions throughout. No fluid.

Lungs.—Left lung normal in color and consistence. Surface of the right lung is beset with fibrous shreds. On section it is normal.

Cultures.—Heart's Blood.—*Streptococcus pyogenes,* one culture; *Bacillus coli communis,* three cultures; sterile, one culture. Liver.—*Streptococcus pyogenes,* and *Bacillus coli communis,* two cultures. Spleen.—*Bacillus proteus,* one culture. Kidney.—*Bacillus coli communis,* one culture. Peritoneum beneath omentum.—Sterile, one culture. Blood from vessel near portal vein.—*Streptococcus pyogenes,* one culture; *Bacillus coli communis,* one culture. Cultures made from heart and blood vessels by aspirating with syringe and adding blood to media.

Case IV.—B. C. H., 02.91. G. C., male, age thirty-three. Anatomical diagnosis. Operation wound; appendectomy; perityphlitis; volvulus of small intestine; acute serofibrinous peritonitis; subphrenic abscesses; chronic tuberculosis of lung and spleen; tuberculous ulcerations of ileum; chronic interstitial nephritis.

Midway between umbilicus and anterior superior iliac spine there is an operation wound running parallel with the rectus abdominis muscle.

Peritoneal Cavity.—There is about 200 c.c. of greenish yellow fluid in the subdiaphragmatic regions of both sides. Smears made from this show a variety of bacteria including the *Streptococcus pyogenes.* The coils of intestine are markedly meteoristic. The exudate in the lower abdomen is less fluid and more fibrinous than higher up, and glues together the coils of the intestine. The subdiaphragmatic surface of the liver shows fresh fibrin in smooth flakes, which can be easily peeled away. The right lower angle of the liver shows greenish fibrin and an exudate which appears to have affected the liver substance itself. Two to 3 cm. internal to the appendix incision, a portion of the wall of the cecum has become firmly adherent to the abdominal wall and presents a fibrous ragged surface on separation with considerable old hemorrhage. The appendix can not be found (at operation a gangrenous appendix al-

ready sloughed off had been removed). Its stump is buried in a blackish mass of tissue lining the inside of the deep pocket beneath the appendix incision.

Pleural Cavities.—Left normal. Right completely obliterated by old adhesions.

Lungs normal, except for a caseous nodule in middle lobe of right lung.

Case V.—R. I. H., 00.1. J. C., male, age fifty. Anatomical diagnosis. Operation wound; acute ulcerative appendicitis; periappendicular abscess; extension of abscess into retroperitoneal and perinephric tissues; perforation of ascending colon; acute localized peritonitis; edema of lungs.

There is an operation wound in the right groin, beginning 2 cm. to inner side of anterior superior spine of the right iliac bone, and extending upward and outward parallel to the crest of the ilium for a distance of 6 cm. Abdomen is distended.

Peritoneal Cavity.—Peritoneum is smooth, except about seat of operation. The mesenteric lymph nodes are not enlarged. No fluid in peritoneal cavity. Intestines are distended with gas. There are slight fibrinous adhesions of intestines to abdominal wall around operation wound. These adhesions are easily separated. The separation exposes two openings—one just external, the other internal, to the cecum, both extending into the retroperitoneal tissues. From them a yellowish semi-fluid fecal material escapes.

Appendix.—Only the base is visible. It arises from the posterior wall of the lower end of cecum, and extends inward along the brim of the pelvis, with the tip slightly curled upon itself. It is firmly bound down by old fibrous adhesions. It measures 12 cm. in length. The proximal 6 cm. appear perfectly normal. The distal 6 cm. is riddled by multiple perforations, from some of which escapes a yellowish fecal fluid. The abscess about these perforations is found to communicate with the retroperitoneal space, into which the above-mentioned openings about the cecum lead. In the posterior wall of the cecum is an almost spherical opening about 1½ cm. in diameter leading into the retroperitoneal tissues also. The retroperitoneal tissue here is softened and diffusely infiltrated with a brownish-gray puriform material. This extends upwards as a grayish-yellow exudate in places muco-purulent, elsewhere as masses of a tough, apparently fibrinous material. It invades the right psoas muscle, extends along the vena cava inferior, posterior to the duodenum as it crosses the spinal column, and infiltrates everywhere the perinephric tissues of the right side, extending even between the diaphragm and the liver.

Pleural Cavities.—Left is smooth; right is almost entirely obliterated by old fibrous adhesions. Lungs are deeply pigmented. Left is very voluminous, especially the lower lobe, but is soft and crepitant throughout. It is very dark red, and on section presents a smooth, moist glistening surface, from which much bloody fluid escapes on pressure. Right is not quite so voluminous as left, but otherwise not essentially different. Bronchial lymph nodes pigmented, but not enlarged.

Cultures.—Heart's blood—*Streptococcus pyogenes.* Peritoneum.—*Streptococcus pyogenes.* Perinephric tissue.—*Streptococcus pyogenes.* Bits of tissue from liver, lung, heart and kidney, placed in thermostat over night, all show large numbers of bacilli, with the morphology and staining properties of the *Bacillus aerogenes capsulatus.*

Case VI.—J. H. H., 1581. Female, age thirty-two. Anatomical diagnosis.—Operation wounds; acute gangrenous appendicitis; periappendicular pelvic abscess; subphrenic abscess; acute fibrinopurulent general peritonitis; acute splenic tumor; cloudy swelling of myocardium, kidneys and liver; edema and congestion of lungs; healed tubercular foci in lungs; acute sero-fibrinous pleuritis, both sides; chronic adhesive pleuritis, both sides.

Under the right edge of rectus abdominis muscle is a recent surgical incision 17 cm. in length with the middle third containing a gauze drain and the upper and lower thirds closed and healing per primam. In the right flank posterolaterally is a recent surgical incision 3 cm. in length, containing drains.

Peritoneal Cavity.—Upon opening the peritoneal cavity the intestines are found adherent to the anterior abdominal wall by firm fibrinous adhesions, which are found everywhere except in the region of the splenic flexure of the colon. Between the loops are numerous pockets of pus. Upon untwisting the coils of intestine, it is found that the appendix is gangrenous, and has sloughed off at its attachment to the cecum. The detached portion dips over the brim of the pelvis, and is contained in a large abscess containing about half a pint of thick grayish-yellow, foul-smelling pus. The abscess cavity occupies Douglas' cul-de-sac. The stump of the appendix is shut off by one of the gauze drains. The other gauze drain lies against the colon on its lateral side. A rubber drain leads into an abscess cavity between the liver, hepatic flexure and lateral abdominal wall. The liver has between its right lobe and the chest wall an extensive abscess which extends also over the lower surface of the diaphragm almost to the median line.

Pleural Cavities.—The right pleural cavity contains 100 c.c. of turbid fluid, containing flakes of fibrin. Left pleural cavity contains about 200 c.c.

Lungs.—Left lung roughened over lateral and posterior surfaces from old adhesions, studded with ecchymoses and moderately voluminous. The dependent portions not crepitant. At the apex of the lower lobe are several firm nodules, which on section are found to be caseous and calcifying. On section the lung is found to contain a great excess of watery, frothy fluid. The lung has a moderately uniform color, from a dark red in the lower lobe to a higher red in the upper lobe. There are one or two emphysematous areas in the lower lobe. Right lung.—Moderately voluminous. Pleural surfaces smooth, except for a few old adhesions at the base. At apex is a puckered scar

containing a calcifying tubercle. The dependent portions of the lung are not crepitant. On section the lung contains an excess of a frothy, watery fluid, and presents the features seen in the left lung. The non-crepitant lower lobe sinks in water.

Case VII.—J. H. H., 1865. Male, age eleven. Anatomical diagnosis. Appendectomy; acute general fibrinous peritonitis; extensive multiple abscess formation in the peritoneum; subphrenic abscess; acute diphtheritic colitis; acute pleuritis, left side.

Peritoneal Cavity.—Upon opening the peritoneal cavity there are found delicate fibrinous adhesions everywhere between the abdominal organs and the anterior abdominal wall. There is a small abscess in the subcutaneous tissue communicating with the granulating surface of the wound by a channel at the lower end. The abdominal organs are very much bound together, and on attempting to separate them one ruptures the intestines. There are delicate adhesions between intestinal coils everywhere. Just under the diaphragm on the left side is a large abscess cavity located outside of the stomach, partially walled off by the liver. This contains greenish-yellow pus. This cavity is lined by a rough hyperemic granulation tissue which is thrown up into folds which are almost like the valvulæ of the intestines. Pressure on the abscess causes the pus to exude from another cavity in the ileo-cecal region, and a probe can be passed 30 cm. without meeting with resistance along the right abdominal wall. The channel can be traced with the scissors from the subphrenic abscess into the ileo-cecal region, where it turns toward the centre, giving rise to numerous channels which pass down between the intestinal coils. Another abscess filled with fluid is found just behind the transverse colon; this cavity is continued around over the aorta, where it underlies the ascending colon. The ileo-cecal valve is found to be practically in its normal position. In the walls of the abscess there are black silk sutures at the point where the cecum is against the abscess cavity; this is probably the seat of the appendix. On the left side midway down the course of the abscess cavity there is a fistulous communication with the ileum. The kidney lies quite free behind the abscess. The transverse colon at the splenic flexure crosses the abscess and lies behind it; the abscess is not therefore retroperitoneal. The channel follows almost exactly the course of the colon down to the region of the bladder, where it crosses over through the sinus, which opens on the abdominal surface. The abscess cavity on the right side extends up to the region of the liver, where it ends blindly. The pancreas is free and apparently normal. The main coils are inextricably embedded together, and there are numerous adhesions and abscesses between these coils. An attempt to separate them results in tearing the intestines. The abscesses lie very often between the adhesions of the mesentery and omental folds. Adhesions are more dense about the region of the ileo-cecal valve.

Lungs.—Left lung is somewhat collapsed in the lower lobe, where it is firmly adherent to the diaphragm.

Of these cases, five were male, two female. One was eleven years old, one twenty-six, four between thirty and thirty-five, and one fifty. In four of these cases the *Streptococcus pyogenes* was present in several organs, in one the *Bacillus coli communis*, and in two no cultures were taken. In five cases the appendix had been removed, leaving only a short stump; in one the cecum and the appendix with obliterated lumen were bound down by fibrous adhesions, and behind the cecum was an abscess; in one the appendix was bound down by adhesions, its distal half gangrenous and riddled with perforations.

In the above seven cases the affection was unilateral 6 times, 4 times on the right, two times on the left. In one case it was bilateral. Right-sided subphrenic abscess is much the more common following appendicitis. The cases of Lang, Weber, Elsberg, Blake and Umber were all right-sided. Strangely enough, Elsberg (*loc. cit.*) does not seem to consider the left subphrenic region in treating the subject, and in his table of collected cases the locus of the disease is not mentioned. If we consider the way in which the abscesses originate secondary to disease of the vermiform appendix it is evident that the right-sided form would be the most common, though the left can readily occur, the localization being somewhat influenced by the situation of the appendix.

Subphrenic abscess secondary to appendicitis may occur in one of four ways: (1) As a localized abscess, a part of a general purulent peritonitis; (2) by extension of the diseased process from the appendix to the subphrenic region by an intraperitoneal route; (3) by extension of the diseased process by an extraperitoneal route, either by way of the lymphatics or by infiltration through the retroperitoneal tissues; (4) by way of the blood current as part of a general embolic septic process, or as a sequence of liver abscesses which are of embolic origin by way of the portal vein.

Originating in either the first or last ways, the abscess might equally well appear on either side; in the second, either side might be affected, but the right would be much more frequently, since the ascending colon forms a natural drain or gutter in this direction; in the third only rarely would the left side be involved, and then, as a rule, accompanying a misplaced diseased appendix.

It is by extension (2) and (3), that the greatest number of these cases originate. Whether the route in any given case will be intra- or extraperitoneal depends on the situation of the appendix and the periappendicular process. If the latter is retrocecal, and so extraperitoneal, the chances are that the process will take an extraperitoneal route and reach the subphrenic region by way of the loose areolar tissue in the lumbar region. When the abscess is retrocecal, it is claimed that there is greater liability to the formation of a subphrenic abscess.

Having reached the subphrenic region extraperitoneally, the abscess may remain so or it may then become intraperitoneal. If the former is the case it is likely to be small, since the peritoneum covering the diaphragm is very intimately adherent to the muscle substance (Hofmann, A. Schmidt, cited by Elsberg). The latter fact would also influence its early penetration into the space between the diaphragm and liver. Among the cases collected by Elsberg 27 per cent. were extraperitoneal, 48 per cent. intraperitoneal and 25 per cent. of doubtful anatomical location.

Our cases illustate quite well some of these points in the manner of origin of subphrenic abscesses. In Case I there is a retrocecal and a right-sided subphrenic abscess. Here it would seem that the latter originated by the extraperitoneal route, though the case is complicated by a volvulus of the small intestine, general fibrinous peritonitis, fibrinous adhesions between the left lobe of liver and the diaphragm and thrombosis of some of the veins in the liver. Case II also indicates an extraperitoneal route to the right subphrenic space; here the general peritoneal cavity is clear. In Case III pylephlebitis and multiple liver abscesses are present. The subphrenic abscess is on the left. Case IV shows bilateral, not completely walled-off subphrenic collections of pus, part of a general peritonitis. In Case V an infiltrating purulent process can be clearly traced from the appendix region up along the retroperitoneal tissues of the right lumbar region, until it makes its appearance between the diaphragm and liver. In Case VI the course of the process is not very clearly traced, though with a general peritonitis and numerous pus-pockets it may have arisen as part of the general peritonitis. Case VII shows an intraperitoneal route of extension from appendix to left subphrenic region. Among the seven cases, it may be claimed that all four ways of origin are illustrated.

In four of the seven cases the process had extended from the subphrenic region into the pleural cavity, though in none was the diaphragm perforated. In Case II the pleura had been incised by the surgeon for drainage. In the other three the pleural cavity on the side of the subphrenic abscess was entirely obliterated by fibrous adhesions.

In cases of appendicitis the pleura may become involved in an inflammatory process in two ways: (1) By extension from a pneumonic focus or infarct in the lung; and (2) by extension from the abdominal cavity, either by way of the lymphatics or by erosion of the diaphragm. This latter form constitutes the appendicular pleurisy of the French writers, is very often associated with subphrenic abscess as in four of our seven cases, and is almost always right-sided. That it is always right-sided, as claimed by Lapeyre (Revue de Chir., XXIII, 1901, 508 and 646) and others, cannot be agreed to; for, as we have seen, subphrenic abscess following appendicitis may occur on the left side, and be followed by acute pleuritis of that side. This did happen in Case VII.

In conclusion, we wish to express our thanks to the pathological departments of the Boston City, Johns Hopkins and Rhode Island Hospitals for access to their records and permission to report these cases.

A CONSIDERATION OF THE SCIENTIFIC APPLICATION OF MECHANICAL VIBRATORY STIMULATION IN THE TREATMENT OF DISEASE.

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WHETHER he would have it so or not, it is evident to the most casual observer of the trend of medical events, that a new era in therapeutics has been inaugurated and entered upon.

For years, our profession was reproached with the taunt from the lips of the critical if not unfriendly laity, that while surgery had made rapid and brilliant strides, therapeutics had stood still. It was measurably true. The era of slavish dependence upon drugs is rapidly giving place to advanced therapeutic methods in the treatment of a large and increasing number of diseases of the human body.

Electricity, which has for years been knocking at our doors for therapeutic recognition and with only indifferent success, has, within the past two years, received the most cordial and enthusiastic consideration from the profession. Doors hitherto closed to it are now being rapidly opened and an earnest invitation given to this new remedial agent to enter. Probably more electrical instruments have been sold to physicians within the past eighteen months than during the entire preceding ten years. Outside of the profession —and it should never have been permitted to go outside—psychic therapeutics, under various names, are coming into public favor. The profession generally is slowly coming to realize that there is something in this method of treatment and is utilizing it to a limited extent. But it has not progressed very far beyond hypnotism yet, which is only one of the elementary steps in this new therapy.

No matter whether we deplore it or rejoice because of it, the fact nevertheless remains that the propulsively progressive spirit of the age appears to be back of these movements and actually forcing what may be very properly called *advanced therapeutics* upon the attention of our profession. All these advanced methods of treatment unquestionably have their proper places. It will no doubt be found, after further investigation, that each is capable of filling a place peculiarly its own, and then much of the present rivalry for preference of method will quietly and quickly disappear.

The purpose of the present paper is to bring to the attention of the profession, in an orderly and necessarily somewhat explanatory way, the

merits of the newest and one of the most valuable methods in advanced therapeutics.

Judging from the character of the inquiries propounded concerning it, it is fair to assume that treatment through mechanical stimulation and vibration is, both as to its theory and the practice of its application, less well understood to-day than electro-therapeutics was ten years ago. Few physicians, it is believed, fully comprehend the theory of its application or are cognizant of the startling beneficial results which frequently follow its proper application to *suitable* cases.

What, then, is meant by mechanical stimulation and vibration? Let us first state *what it is not!* It is not massage. There is a rather general belief that it is essentially, if not mainly, that. Nor is it similar to, or an improvement upon, the Swedish movements. It embraces the beneficial qualities that inhere in all these methods, but is not subject to their limitations of usefulness.

Mechanical stimulation and vibration are applied with reference to the accomplishment of one primary condition, viz.: *Stimulation of the nerve or nerve centers concerned in and controlling the diseased organ, which are found principally in the spinal and sympathetic systems.* This is attempted for the double purpose of (1) Stimulating and equalizing blood currents; and (2) stimulating secretion and excretion, and the lymphatics.

Briefly stated, this comprehends its scope and design in the treatment of diseases or diseased conditions of the body. It becomes at once apparent that its range of application is almost coextensive with the needs of the ailing physical organism, and is, in varying degree, applicable to almost every form of disease. While in no sense a "Cure All," it nevertheless has a wide range of application and will eventually find a place in the armamentarium of the specialist in the various branches of medicine as well as in that of the general practitioner.

The aim of all rational therapeutic methods, whether with or without drugs, is to modify or change abnormal conditions by stimulating into action that which shall tend to make other and normal ones. The intelligent use of any drug or remedial method is to reach and evoke in the patient the faculty of self help—the natural power of repair—just when and where it is most needed. The essential meaning of all therapeutics is to summon and concentrate this remedial force on the obstacle or obstruction to be overcome or removed. A stream of given dynamic ability is adequate to supply the organism in ordinary health; but morbid conditions must be overcome with a stream of greater intensity, directed to the seat of the obstruction. It is thus and only thus that we can assist nature to make a cure or to afford relief in disease.

Stimulation of the nerve or nerve centers connected with the diseased organ, was stated to be the primary factor in the treatment by mechanical vibration. What, then, is meant by "nerve stimulation," "toning the nerves," and like expressions that we have grown so accustomed to using? Simply that the nerves are urged and assisted to more effectually functionate and so fulfil their physiological mission within the physical organism. If we succeed in doing this, we are coöperating with and assisting nature to evolve a cure.

The nervous system is so constructed that it can be affected only by vibrations. It alone responds to vibrations. So long as it is able to receive and respond to them, the bodily organs remain healthy; otherwise they become abnormal and diseased. It is perhaps unnecessary to say that the natural and normal stimuli of the nervous organism inhere in or are a part of the universal ether (more elastic than any other form of matter) that fill the universe. It is the medium filling all space through which the vibrations of light, radiant heat and electric energy are propagated. In normal conditions, it acts *automatically* upon the nervous organism.

When, for any reason, a nerve fails sufficiently to respond to its natural stimuli, it becomes the duty of the physician to assist it by providing, temporarily, artificial stimuli. This, I believe, is more efficiently accomplished through the application of mechanical vibration than by any other method known to us at the present time. Landois and Stirling in their Text-Book of Human Physiology (page 676) say: "Nerves possess the property of being thrown into a state of excitement by stimuli. * * * Mechanical stimuli act upon the nerves when applied with sufficient rapidity to produce a change in the form of the nerve-particles."

Having seen what "stimulation" of the nerves really mean, the next inquiry naturally would be, "what of it?" what results from such stimulation? A good many changes are thus brought about, notably (because very important) increased blood supply to a part through the action of the vaso-dilator nerves, or diminished supply through the action of the vaso-constrictor nerves In the one case, local nutrition, secretion and excretion are improved, while in the other, local congestions or engorgements are relieved. The tendency of the automatic functions of the body—the reparative processes of nature—is to maintain equilibrium. This condition is maintained in health and interrupted in disease. Mechanical vibratory stimulation, when applied to the controlling nerve centers, powerfully assists in accomplishing this purpose. Blood pressure is raised or lowered by its application precisely as the parts or organs require it, in order to restore and maintain perfect equilibrium. We know that nerves possess an inhibitory as well as an accelerating quality, a conspicuous example of which is found in the pneumogastric with its numerous branches. The action of these functions is orderly and perfect so long as the nerve itself remains in normal function. But should irregularity of action occur, we seek to apply our remedy to the nerve in its entirety rather than to any of its component qualities of function. We know very well that nature can be trusted to attend to proper functionation if equilibrium is only maintained.

Elimination may be accelerated through stimution applied to the nerves controlling the lymphatic glands and the other larger excretory organs, of which the liver, kidneys and spleen are the most important. This is a highly important principle in this method of treatment.

Speaking broadly but still accurately, it is the *quality* and activity of the circulation that keeps the functions of the body in right or wrong condition, and *the nerves govern and control the circulation.*

Thus far in this discussion we are probably in substantial accord with the views of leading physiologists. Recurring now to the primary proposition submitted earlier in this paper, viz.: that mechanical vibratory stimulation accomplishes its most important work through stimulation of the nerves or nerve centers concerned in and controlling the diseased organ and *which are mainly located in the spinal column,* we may naturally anticipate dissent or skepticism. There are two reasons for this. First, we know, in a general way, that the osteopaths, so called, are much given to manipulating the spine, therefore, we shrink from anything savoring of their methods of procedure; second, we have not perhaps carefully studied our physiologies with reference to this point, especially those of more recent date, otherwise support would be found for the theory and practice of localization of controlling nerve centers given off at various points along the cord.

The first objection is puerile and should be dismissed with the brief statement that while we as a profession know and care very little about the theories and methods employed by the osteopaths, we cannot afford to reject, without investigation, any procedure likely to benefit our patients, simply because similar methods and measures may have been or are being employed by irregular practitioners. As physicians, it is alike our province and our duty to employ whatever is meritorious and beneficial in alleviating human suffering regardless of the source from which it emanates.

The second objection can be best met by referring those who care to pursue the subject, to page 578 of Foster's Text-Book of Physiology, under the heading of "Automatic Action of the Spinal Cord." Also to page 564, on "The Reflex Action of the Spinal Cord." Also to page 301, where "a nerve center situated in the lumbar spinal cord" is referred to as controlling the sphincter ani in the act of defecation. Landois and Stirling, on page 861 of their physiology, say "Splanchnic Area. By far the largest vasomotor area in the body is that which is controlled by the splanchnic nerves as they supply the blood-vessels of the abdomen; hence stimulation of their peripheral ends is followed by a rise of blood pressure." The increased pressure continues only until equilibrium is established, and the same stimulation in the event of stasis or engorgement, is in treatment by mechanical vibratory stimulation, quickly followed as a secondary effect, by lowered blood pressure.

Quotations similar to the above might be multiplied almost indefinitely, but attention is especially invited now to pages 837 to 867 of Landois and Stirling's Physiology, where it will be found that the contentions of this paper upon the point now under discussion, are fully sustained.

Reference is also invited to Kirke's Handbook of Physiology. On page 297 of this work is this statement: "The pulmonary vessels are supplied by nerves which have been discovered by stimulating certain nerve-roots in the upper thoracic region." Again, on page 299: "The vaso-constrictor nerves for the whole body leave the spinal cord by the anterior roots of the spinal nerves from the second thoracic to the second lumbar, both inclusive." Only a limited number of references can be here given, not because they do not plentifully exist, but rather that the limits of this paper will not permit of further amplification of this point. It may be said, however, that the contention that the various organs of the body are affected through the nerve connections given off from the spinal cord, is fully sustained by the best of the more recent writers on the subject of physiology.

Emphasis is placed on this branch of the subject because it is believed that upon the recognition of spinal nerve localization and the application of vibratory stimuli to these points, depends the success of treatment by mechanical vibration. This paper is not designed to give instruction in the technic of the method to be employed, but rather to point out the rationale of the treatment, with a brief statement of the writer's experience with it in certain chronic diseases.

Diagnosis cannot be dispensed with when using this method any more than in drug therapeutics. The theory of deficient or faulty nerve stimulus, either spinal or sympathetic (generally both), must be accepted and treatment applied in accordance therewith if the best results are to be hoped for and expected from this method.

The best technic is also important and must be learned precisely as dexterity in the use of other instruments is acquired. There is here as elsewhere a right and a wrong way of doing things. The application of vibratory stimulation is no exception to this rule, and there is a *best* way of doing that, too. We have no right to expect the best results except as our operative technic is the best.

Some Practical Results.—It would be quite impossible in a paper of reasonable length, to set out in detail the histories of all the cases treated within even so brief a period as one month. Inasmuch as a large number of cases have been treated daily at the clinics of the New York School of Physical Therapeutics during the last three months, only *general* references to them by groups and as to results, can at this time be made. At a later date, I shall hope to present a series of cases, with histories in detail.

A treatment which stimulates to greater activity the neural connections of the various visceræ of the body; that equalizes blood pressure; stimu-

lates secretion and excretion and the glands concerned in elimination; that improves local and general nutrition and metabolism; that inhibits nerves and nerve-centers and so relieves pain, has indeed a wide range of application. Experience has abundantly demonstrated that this is true of the treatment we are now considering.

As already intimated, it is impracticable to do more at this time than to present a cursory view of the general range of diseases in which vibratory treatment has been attended with marked results, and by that is meant results more prompt and satisfactory than by other present recognized methods of treatment. In this list are to be mentioned the various forms of nervous disorders: neurasthenia, melancholia, insomnia, hysteria, and the like, in all of which beneficial effects were realized from the first treatments.

Ocular affections, dependent on anemia or hyperemia, have been uniformly benefited. Our success in affections of the ear, up to the present time, has been less satisfactory than with those of the eye. In exophthalmic as well as in non-exophthalmic goiter, the treatment has been highly successful and resulted in a decided and steady reduction in the enlarged thyroid gland. In scoliosis, quick results have followed the treatment in every instance, and without employing suspension, casts, braces, or other auxiliary methods. In the various congestive forms of pelvic diseases (exclusive of pus sacs), vibratory treatment has given results that may well inspire the hope that a brighter day is soon to dawn in the management of this large and troublesome class of cases.

Functional disorders of the digestive organs, inactivity of the liver, kidney, spleen and bowels have usually been much benefited from the first treatment, and most cases symptomatically cured after a few additional treatments.

Mechanical vibration has been found *uniformly* successful in the treatment of varicose conditions. Inflammation and pruritis are quickly controlled, and the healing of indolent ulcers of various kinds, rapidly occurs.

By stimulating the lymphatics and emunctories of the body, infection and its local products have rapidly disappeared. There is good ground for hoping that vibratory stimulation will be found beneficial, at least, if not curative, in the treatment of malignant growths. Why should we not reasonably expect it? This treatment fulfils the requirements which are believed to be essential to success in this therapeutic endeavor. It is true that no new material element is introduced into the organism by this treatment. But is that imperative to success? Is not nature, the supreme healer, able to successfully eliminate all morbific products, provided only that all obstructions to its operations are removed and the glandular system is preserved and maintained in normal functions? Changes of climate, occupation and habits, conceded to be very potent remedial agents in the cure of various diseases, do not introduce any new material element into the body. They only assist natural processes by placing the patient in position favorable to the removal of obstacles from the pathway toward cure.

Thus far only cases in the incipient or first stage of pulmonary tuberculosis have been treated. Every case thus far treated, however, has been markedly benefited without employing any other remedial agent whatsoever. One case in which there was depression below the right clavicle, marked dulness on percussion, with râles and considerable cough and expectoration, showed much improvement after the second treatment. At the end of a month's treatment, there was a decided gain in appetite, weight and strength with a disappearance of all subjective and objective signs except the clavicular depression and a very slight amount of cough. In all of these tuberculous cases, it was obvious that mechanical stimulation at the outset favorably affected nutrition. Whether or not increasing experience shall demonstrate the entire curability of many of these cases by this method of treatment, enough has already been determined to warrant the belief that all cases in the earlier stages at least, may be more quickly benefited by mechanical vibratory stimulation than by any other method of treatment now known to us.

Cases of subacute rheumatism thus far treated have all been benefited, and most of them cured. Our records show that not a single case of neuralgia, such as myalgia, sciatica, pleurodynia, etc., has failed of speedy and lasting cure under this treatment where it has been persisted in for a reasonable length of time.

Of course no single method of treatment will ever be able to cure every case of even *curable* disease; still less can it be expected to succeed in those cases that lie entirely outside of curative possibilities as they are recognized to-day. Too much must not, of course, be claimed for mechanical vibratory treatment. It is not a cure-all, as stated earlier in this paper. Nevertheless, experience warrants the belief that there is more danger at the present stage of development of this treatment, in our expecting too little rather than too much from it. It is, in my belief, one of the certainties in the therapeutics of the near future that mechanical vibratory stimulation, properly applied, is destined to bring within the classification of "curable diseases," many chronic and acute disorders that thus far have been regarded as hopeless or incurable.

A word of caution ought to be added in closing. Not everything that goes into the hopper is grist. There are already several devices or instruments manufactured for the purpose of supplying mechanical *vibration* to the body. While none of them can be said to be wholly devoid of merit, there has thus far been but one instrument produced that seems to me to fully meet the requirements of the physician who desires to use this force with anything approaching scientific precision. An instrument manufactured and sold by

the Vibrator Instrument Co., of Chattanooga, Tenn., appears to meet every reasonable requirement of the therapy of mechanical vibratory stimulation. It is the only mechanical device in this line, up to the present time, that has recognized in its construction the correct principle that the length of the stroke and the rigidity of the instrument is of greater importance than the rapidity of the vibrations. By shortening or lengthening the stroke of the arm of the vibration attachment, the operator is enabled to apply to a given area or part, either vibratory stimulation (where moderate stimulation only is desired) or vibration alone (where profound depletory effect is desired). This is of commanding importance. Indeed, it will be found in practice to accurately measure the difference between success and failure in the treatment of very many cases.

In conclusion, it cannot be too strongly recommended that those who propose to test the merits of this new method of treatment, should use an instrument constructed upon correct or scientific principles and solely with reference to the therapeutic requirements of physicians. Obviously this is impossible with instruments in the construction of which no provision has been made for restricting or localizing the treatment to specific areas or parts of the body. The majority of vibration instruments thus far manufactured, are open to this serious objection. In order to secure satisfactory results, we must initiate and pursue a line of treatment that is scientifically adapted to the case in hand, and to successfully accomplish this, an instrument is required that admits of and facilities the localization of our vibratory treatment. This is of first importance and without it the highest success with this method of treatment cannot be attained.

TONSILLITIS CLASSIFIED AS AN INFECTIOUS DISEASE.

BY WALTER SANDS MILLS, M.D.,
OF NEW YORK CITY.

IT is a well known clinical fact that all catarrhal diseases of the nose and throat are more or less contagious. Tonsillitis is no exception.

Despite this undoubted contagiousness of tonsillitis the Department of Health of New York City, in February, 1902, ruled that children suffering from tonsillitis should not be excluded from school and so notified its Medical School Inspectors. Personally, I believe tonsillitis in the school room to be more detrimental than parasitic skin diseases, which the Department of Health does exclude.*

For a number of years I have searched each new work on practice expecting to find tonsillitis classified where I believe it to belong, with the infectious diseases. Bartholow, Anders, Strümpell and Osler put tonsillitis in the list of digestive diseases. Pepper's System of Medicine, Goodno, The Loomis-Thompson System of Medicine, and The Twentieth Century Practice, classify tonsillar diseases in a group by themselves. Allbutt's System of Medicine places tonsillar diseases with diseases of the pharynx. Anders, Goodno, Osler and other American authorities now place pneumonia, which is just as much a local disease of the lungs as tonsillitis is a local disease of the tonsils, in the list of infectious diseases. Allbutt's System of Medicine and the last American edition of Strümpell still put pneumonia in the list of respiratory diseases.

Acute articular rheumatism, which surely is less contagious than tonsillitis, is now classified by many of the American authorities as an infectious disease. These same authorities state that tonsillitis is more or less closely related to rheumatism, yet they refuse it a place in their lists of infectious diseases. Dysentery and typhoid fever are universally classified as infectious, but they are not nearly as liable to be transmitted as is tonsillitis.

An infectious disease is one that can be transmitted from person to person; one where in many cases we can get a definite history of exposure, followed by a period of incubation before the onset of symptoms in the new patient; or a disease one or more stages of which may be contagious and set up a similar train of symptoms in a previously well person.

The eruptive fevers, like measles, scarlet fever or smallpox are perhaps the best examples of infectious diseases and most completely fulfil the above requirements. Tonsillitis I have found to run almost as definite a course as any of these. To say that all cases of tonsillitis cannot be traced to preceding ones is simply begging the question. Every case of smallpox or measles or any other recognized infectious disease cannot be traced to its source, but enough of them have been so traced to make us isolate a new case as soon as we diagnose it. And so with tonsillitis: every practitioner of any experience with it must have met with successive cases in households that led him to believe it to be contagious.

My reason for classifying tonsillitis as an infectious disease is based solely on its clinical history. There is no known specific bacillus for tonsillitis, neither is there for measles, or scarlet fever, or smallpox. Staphylococci and streptococci have been found in tonsillitis, and occasionally, according to Simon, pneumococci.

The contagiousness of tonsillitis is well shown by the following series of cases:

December 4, 1897, I was called to a household to attend the waitress who was ill with tonsillitis. On inquiry I learned that a child in the family, aged twelve years, had been ill during a part of November with what the attending physician had called "grippe, complicated by sore throat." It had probably been a case of tonsillitis. The waitress had carried meals to the sick room while the daughter of the house was ill. On the fifth I found the governess, who had acted as nurse for the child, down with tonsillitis. On the sixth the

*The Department of Health has been much more particular since the schools opened for the fall of 1902 and now excludes catarrhal disease.

two-year-old brother and the cook were both ill with tonsillitis. Two of the above were cases of simple catarrhal tonsillitis, two developed into the follicular variety. Each of the four probably had become infected about the same time. On the twenty-second of December the coachman was taken ill with tonsillitis. This was 18 days after the disease had appeared in the kitchen, or 16 days after the cook became ill. The coachman slept in the stable but got his meals in the house. He was sent to the New York hospital for treatment and my diagnosis was confirmed.

January 26, 1898, I was called to see a man ill with tonsillitis. He had been exposed a week before while visiting a friend suffering from the same disease. My patient was promptly isolated, the only other member of the household coming in contact with him being a niece who carried him his meals. On February 23 she became ill with tonsillitis.

In March, 1901, I attended a fourteen-year-old girl down with tonsillitis. She had been visiting out of town the week before, but her visit had been cut short because her little hostess had become ill with the disease.

In January, 1902, I attended a girl of ten ill with tonsillitis. She had been playing at the house of a friend ill with quinsy.

In March, 1902, a physician who had been attending several cases of tonsillitis developed the disease himself. In due season his wife and two children came down with it.

Other series of cases might be quoted, but these are sufficient to emphasize the contagious nature of the disease. If the history of each case of tonsillitis was carefully gone into I believe a large majority of them could be traced directly to exposure to some preceding case. I have been able to so trace more than half of my cases. My experience is not unique. Osler, Anders, Strümpell and others speak of the contagiousness of tonsillitis. A recent paper in the *Medical Record* (March 1), by Dr. R. C. Brown, of Milwaukee, on "Follicular Tonsillitis," insists on its contagiousness and cites cases to support the contention.

One attack of tonsillitis predisposes to another. This is also true of some of the other infections. It may be that such cases are not absolutely cured, that the disease is latent but still present, and only awaits some exciting cause to start the cycle of acute symptoms up anew. Exposure to cold and dampness, or exposure to noxious gases may act as exciting causes of tonsillitis. Excessive venery is said to act as an exciting cause, supposedly by reflex action. It may act so sometimes, but why is it not more probable that a large proportion of such cases are really due to carelessness in getting overheated and then chilled, or to osculatory contagion?

Tonsillitis is often found associated with many of the other infectious diseases, especially with influenza, scarlet fever, measles, acute articular rheumatism and diphtheria.

In considering these various etiological factors of tonsillitis it must not be forgotten that they in no wise militate against its being contagious. Unless seed is sown in proper soil no crop will result; and in all infectious diseases it is necessary to have not only the contagious element, but also a tissue prepared to receive and nourish it. The various exciting causes mentioned impair the tonsillar tissue, and so serve to make ready the soil for planting the disease element.

In my recorded cases of tonsillitis, where I have been able to obtain a history of exposure, I find that the disease presents a definite period of incubation varying from one to four weeks. The majority of cases appear within 14 days. One case developed four weeks after the first exposure; but as this patient was in attendance on another case for an entire week, infection may have taken place at any time during that period.

Sex has no influence over the disease, my cases were equally divided between the sexes. Tonsillitis is said to be most frequent between the ages of fifteen and thirty. Nearly all of my cases were between ten and thirty, a number occurring between ten and fifteen. My youngest patient was eighteen months old, and I have had three older than thirty-five years.

Osler calls tonsillitis a local disease with severe constitutional symptoms. Why not call it an acute infectious disease with local manifestations? The onset is similar to that of other of the infections.

There is a period of general malaise lasting from a few hours to a day or two. The patient usually feels hot and cold by turns, or both at once. He may feel insufferably hot, yet every time he moves he gets the shivers. At other times there is a pronounced chill at the beginning. The temperature runs up to 102° F. or more, sometimes reaching 105° F. Pain and tenderness of the throat, externally and internally, are early symptoms. The patient complains of headache, backache, and a general tired or aching feeling all over. The face is flushed and the eyes congested. All of these symptoms develop rapidly, and the patient feels prostrated out of all proportion to the local manifestations.

Examination of the mouth shows a coated tongue. It may be very dry, or there may be an exessive secretion of mucus. One or both tonsils will be very red and more or less swollen. This redness may extend to the soft palate and uvula; later the parts may become bluish. Frequently a yellowish exudate shows itself on the tonsils. If the inflammation extends to the lining of the tonsillar follicles the disease is known as follicular tonsillitis; if it goes still deeper, into the parenchyma of the gland and causes suppuration, it becomes quinsy. In other words, simple catarrhal tonsillitis, follicular tonsillitis, and quinsy are successive stages of the same disease. Fortunately proper treatment will control its advance and prevent the development of quinsy in many cases.

As proof that the various forms of tonsillitis are but different stages of the same disease I

wish again to call attention to the first series of cases quoted above. Two of the first four were cases of simple catarrhal tonsillitis, two were cases of follicular tonsillitis. All four originated from the same preceding case, and developed the disease about the same time. The simple cases were arrested in a day or two, the others ran on for several days. Also, the child treated in January, 1902, originated from a case of quinsy.

As tonsillitis is undoubtedly contagious sometimes (all writers are agreed as to that), and as the majority of cases occur in children or young adults, the first thing to do on seeing a case is to isolate the patient. If a case is found in school the patient should be sent home at once.

The patient should be put to bed and placed on a liquid diet. In the way of local treatment I use nothing but a gargle of cheap claret wine. This can be used every two or three hours or oftener as the patient wishes. The tannic acid in the claret acts as an astringent and the throat of the tonsillitis patient usually feels much better after its use. I use a number of different drugs for tonsillitis, and I believe with benefit to my patients. I have never had a case of tonsillitis go on to suppuration (quinsy) although I have detailed records of fifty and have treated many others. I have seen a number of cases of quinsy that were just on the point of breaking down when they came to me for treatment. Moreover, I believe the tendency to recur has after a time been eradicated by the treatment which I shall outline.

Aconite in small doses frequently repeated, at the very onset of the disease, is often of service in simple tonsillitis. When the disease has progressed to the follicular stage aconite is no longer useful. By small doses frequently repeated I mean drop doses of a 10 per cent. solution every hour, given preferably in water. Osler recommends full doses of aconite, but in my experience the smaller doses are more satisfactory.

If the fever is very high, pulse full and bounding, face flushed, eyes red, and evidences of intense congestion of the throat are present, a one per cent. solution of belladonna is the best remedy. Bartholow gives good indications for this remedy in his "Materia Medica." He fails, however, to mention it in the list of remedies for tonsillitis in his "Practice."

In follicular tonsillitis the remedy *par excellence* is phytolacca. I use drop doses of a one per cent. solution every one or two hours, according to the severity of the case. Its action is almost specific. As noted above, I have never had a case go on to suppuration. Bartholow speaks of phytolacca as a glandular remedy, especially as a specific in gathered breasts to prevent suppuration. I am able to endorse that most emphatically, and I can speak just as highly of it in follicular tonsillitis.

If suppuration has already begun when the case applies for treatment, nothing will clear it up so quickly as sulphide of calcium in $^1/_{100}$ grain doses.

For the routine giving of a cathartic at the onset of tonsillitis I never could see a reason. Quinine and the salicylates are of no special value, at least not in my experience. The use of antipyretics with the above treatment is unnecessary.

My object in writing this paper was simply to call attention to the contagious nature of tonsillitis, and to make a plea for what I consider its proper classification as an acute infectious disease. But when I came to read up the recognized authorities on their treatments I could not forbear outlining methods which appeal to me as more simple and more effective than those usually recommended.

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SPECIAL ARTICLE.

THE MEDICAL INSPECTION OF SCHOOLS: A PROBLEM IN PREVENTIVE MEDICINE.*

BY LEWIS S. SOMERS, M.D.,
OF PHILADELPHIA.

(Continued from Page 105.)

I have endeavored in part to point out some of the ways in which infection is transmitted in the schools, but only such as seem to be directly concerned with the work of the medical inspector. There are however numerous other means by which various diseases are transmitted from child to child, such as the placing of wraps in close contact or on the floor as is frequent, the common use of books, pencils etc. but while the inspector may enhance his value by detecting such mistakes, yet this applies more closely to other aspects of school hygiene which it is not desired to detail here, although they all bear a close relationship one with the other.

Exceedingly favorable results have been obtained in detecting infectious disease in the homes of school children and thereby preventing its entrance into the school, by having the teacher report to the inspector all children who have been absent from school for four or more consecutive days, or children who have been absent on account of illness, but who are unable to state the nature of the illness on their return to school. In the first class, the inspector on receiving the report of absence ascertains at the home of the child the nature of the illness and if it is contagious enforces the usual rules in regard to quarantine, or in states where compulsory educational laws are in force, the truant officer visits the home to determine the cause of absence from school and in case of illness reports the facts, when the school inspector proceeds as mentioned. Evidence has accumulated to show that this has been of considerable value in eliminating such diseases and in nearly every place where such measures have been enforced, epidemics have been prevented from gaining a foothold. In the case of those returning to school after illness, the problem is a little more difficult as many children return after diphtheria with the Klebs-Löffler bacilli still on their mucous membranes; or after measles while still capable of communicating it to others and after

scarlet fever before desquamation has ceased. Where quarantine laws are rigidly enforced such dangers are reduced to a minimum, but still a small number of children return before all danger has passed, while where such laws are lax especially in rural districts, the dangers of propagating the diseases mentioned are correspondingly enhanced. Where the medical inspector acts as an agent of the health board it becomes his duty to examine the child, or certify to a negative culture if possible in cases of diphtheria and until he has certified that all danger of infecting others has ceased to exist, the child should not be allowed to return to school; while the children who have returned after unknown illness should not be allowed to enter the class room until it has been definitely ascertained that they or any one in their family have not suffered from a communicable disease, or in case such is found to have existed, the proper precautions should be enforced until the inspector has decided that it is perfectly safe. Almost daily the inspector will be confronted with cases in which he may suspect the beginning development of an infectious disease, but in which the symptoms are not sufficiently pronounced to enable him to make a diagnosis, tonsilitis especially is apt to produce considerable confusion in this respect, but definite measures should be taken and the child should be debarred from school until the diagnosis either made by the family physician or preferably by culture, indicates the harmless nature of the throat trouble. Too great care cannot be exercised in this respect and it is better to err on the side of safety and temporarily exclude a single pupil, than to expose the entire class to what may be the beginning of an attack of diphtheria.

Practically of the contagious diseases diphtheria is the most serious one frequently encountered and is responsible for many deaths among children of school age. During the census year 1900, there were 16,475 deaths from this disease alone the great majority being children of school age, while the number of cases it is impossible to determine, although they were undoubtedly over 100,000. No disease is more dreaded in the home and in the school than diphtheria, yet it lies in the power of those in authority to greatly diminish the mortality rate and also to decrease the number of cases by adding in addition to other sanitary measures commonly in force, the medical inspection of schools, so that incipient cases will be detected and early treatment especially the administration of antitoxine will greatly reduce the mortality at the same time also diminishing the tendency to the infection of others. That diphtheria in recognizable stages is comparatively common in the schools can readily be shown by the cases found there. During four months in Chicago, 1,417 cases of diphtheria were located and as the result of this work, the statistics of diphtheria for the year preceding medical inspection and the first year of its operation suggest an important lesson. During 1899 the year preceding medical inspection there were 3,931 cases of diphtheria with 843 deaths, while for the first year of inspection there were but 3,303 cases and 797 deaths, a decrease in cases of 628 with 46 fewer deaths. From January to May 1900, 170 cases of this disease were found in the schools of Chicago, while for the year ending June 30, 1901, 193 cases were found, surely enough to indicate to any thinking mind that this is a serious problem in preventive medicine. Murphy in his recent report found that the prevalence of diphtheria was increased by school attendance and he found that it was the experience of nearly every health officer that the relation between school holidays and a fall in the amount of diphtheria was particularly striking. In four months in Newark 13 cases of diphtheria were found, while in Chicago 747 cases of this disease in school led to the discovery of 26 cases in homes; not receiving medical attention and that were not recognized. That medical inspection is retarding the spread of diphtheria is recognized by the Massachusetts State Board of Health who state that the prevalence of the disease in epidemic form made it possible for the board to introduce three new forces for its suppression namely, antitoxin, the use of the bacteriological laboratory and the third and probably most potent agent is the daily medical inspection of the schools. In Boston for 14 months ending December 31, 1895, 77 cases of diphtheria were found sitting in their seats at school, while in one week in New York 13 cases were found, anotner week four cases, while from a study of diphtheria in its relation to school attendance in London and Continental cities, Smith found that there was a strong presumption that school attendance is the main factor in the spread of the disease.

While scarlet fever is not near as frequent as diphtheria, yet in the last census year it was the cause of 6,333 deaths, while in those who recover it is the most frequent cause of suppurative otitis and its sequelæ may be seen wherever any considerable group of childeren are gathered together. While in comparison with other affections its numbers in the school seem small, yet on account of its extreme virulency each case exists as a serious focus of contagion and represents the basis of a formidable epidemic. Yet such cases have been found in school, 306 were discovered in Chicago, while a comparison of the number of cases for the years preceding and following inspection showed a decrease of 2,325 cases with 307 fewer deaths following the first year of inspection. The danger from this disease in the schools is dependent to a great extent upon those pupils who have returned before desquamation has been completed. Such cases however should be detected by the inspector and immediately returned to quarantine; no case of scarlet fever under any circumstances being allowed to return until desquamation has entirely ceased. From January to May 1901, the inspectors found 401 cases in the schools, while in other cities it appears to be found in much smaller numbers, 12 cases only being found in nine months in Philadel-

phia; four cases in four months in Newark, while in Boston for 1900 there were but 23 cases discovered in this way. An instructive lesson in regard to this disease is related by Keen in which 231 cases of scarlet fever were discovered not by the family physician, nor by the parents of the children, but by the medical inspectors and what is especially striking, the detection of these 231 cases at school led to the discovery of 745 cases at home.

Measles, chicken-pox and whooping cough are all considered by the laity to be of little moment and as a result it is of daily occurrence to find children with these diseases regularly attending school. This is especially so in measles and chicken-pox where the eruption is slight and not detected on casual examination, while in whooping cough where the spasmodic outbursts are infrequent, the child is kept at school until he has a paroxysm in the class room which usually leads to his detection. Many health boards do not officially recognize these diseases although measles and whooping cough are responsible annually for 12,866 and 9,958 deaths respectively, a greater mortality in each instance than from scarlet fever. These three affections undoubtedly form a large majority of the acute communicable diseases found in the school and the first two should receive sufficient respect from the authorities both health and educational, to prevent the annual outbreaks which are initiated a few weeks after the beginning of each term of school. That these diseases are prevalent and attend school daily, can readily be seen by the following figures. In Boston in 1895, there were found 28 cases of chicken-pox, 116 of measles and 33 of whooping cough, while for 1900, 121 cases of measles, 108 of chicken-pox and 62 of whooping cough were excluded by the inspectors. In New York City in two weeks, six cases of measles, four of whooping cough and 23 of chicken-pox were found, both measles and chicken-pox being recognized as contagious diseases by the Board of Health, quarantined accordingly and are not allowed to return until recovery has ensued and the premises have been disinfected. In Chicago in 1896, 46 cases of measles in the schools led to the discovery of an epidemic of this disease in several sections of the city, while for the school term of 1900-1901, there were found in attendance 434 cases of measles, 626 cases of chicken-pox and 195 individuals suffering from whooping cough. While in the same city from January to Mav 1900, the inspectors discovered 648 cases of measles, 55 of whooping cough and 670 of chicken-pox and in Philadelphia during one term, the inspectors found 152 cases of measles, 73 of chicken-pox and 20 of whooping cough. As regards these three diseases alone, medical inspection deserves respectful attention at the hands of sanitarians. As directly relating to this subject, the influence of measles upon school life has been studied by Schafer who found in four years in Schleswig-Holstein that the schools had to be closed 82 times on account of epidemics of measles and on several occasions they were closed on account of a lack of sufficient scholars to attend, nearly all being ill from the prevalence of this disease. While Armstrong the medical health officer of Newcastle-upon-Tyne closed all the schools for four weeks on account of the prevalence of measles and whooping cough and the epidemic was suppressed, while during a similar epidemic the following year, the experiment was tried of closing each school where scholars were taken ill only long enough to allow of disinfection and it was found that as far as measles was concerned, it was followed by its extinction. In one school in which there were 44 cases in three weeks preceding disinfection, after the first two weeks the number fell to three in 13 weeks.

So few cases of tuberculosis especially the pulmonary form have been found, that for practical purposes little attention need be given it here. When a case is discovered however I believe the inspector should advise that the affected child should not be allowed to remain in school and this for two reasons; first because healthy children should be protected from this disease and the second reason which seems to admit of little argument, is that for the best interest of the child it should be placed under conditions favorable for the cure of the disease if such are possible and therefore should not be allowed to remain in school where it must inevitably forfeit its life for a partial education which will necessarily be of no value to it.

As regards the contagious diseases previously mentioned and more especially diphtheria, medical inspection has proven of not only a direct but also an indirect value, by in many instances, shortening the period of quarantine placed upon the case and this has resulted from the early detection of the disease in school and thereby the material shortening of the course of the disease by prompt and early treatment, especially is this so since the introduction of antitoxin. Anything which will exercise a prophylactic influence regarding contagious diseases has not only a vital but also an economic value, for among the poorer classes quarantine usually means the difference between independence and pauperism and even the small scale in which medical inspection now exists, has done much to protect the school child from these communicable diseases and therefore has to many families meant independence at home and not a long period of want and privation. Further, inspection not only as regards contagious diseases but the entire class of affections found in school children, aids materially the chances of recovery by detecting acute diseases in their incipiency and therefore allowing of prompt treatment, at the same time removing the child from harmful influences. In contagious diseases it has caused in some places a better understanding among parents of the necessity for isolation and while this is essential in the suppression of this class of diseases is no doubt constantly being evaded, yet from the testimony of those connected with medical inspection in one way or another, numerous

instances have occurred in which previously a contagious disease was not reported, but after the effects of this measure had been but partially demonstrated, the presence of another case of diphtheria for instance in the same family, was promptly reported. Isolation has also been aided by these means, as many of the cases are diagnosed in the school and therefore placed under the control of the health authorities as soon as the child reaches home, thus absolutely preventing the least pretense of evading quarantine measures.

As many of the states are adopting compulsory educational laws and therefore of necessity require truant officers, the employment of these officials as an aid in medical inspection has proven of added service especially in Chicago, where the medical inspection of schools is under the control of the Compulsory Educational Department. This is a new feature in inspection work but the truant officers have unexcelled facilities for detecting cases of contagious diseases in the homes of the school children and if this system is utilized, it will add greatly to the efficiency of the inspectors in detecting disease. The principal of the school reports to the truant officer all pupils who have been absent for four or more days and whose cause of absence is unknown and if on investigation the truant officer finds that there is illness in the house, a report is made to the principal of the school and the Board of Health, and in case the disease is found to be contagious, the children from the address where the disease existed are excluded from school until all danger has elapsed. That this work has been of added gain to medical inspection is shown by the detection of 2,706 cases of illness found by the truant officers during the school year of 1899-1900.

By removing many sources of contagion in communicable diseases and by detecting physical defects and various ills in the scholars, the interruption of school work through illness is reduced to a minimum. Of course it is impossible to estimate with any degree of accuracy the number of days of school attendance gained by the child as a result of medical inspection, but it must be considerable especially as the result of detecting defects of the special senses, where correction means days at school which had been lost in the past by headaches from eyestrain or frequent attacks of coryzia and acute inflammations of the upper air tract from the presence of enlarged tonsils, adenoids, etc.

An important aspect of medical inspection that has been much neglected is the examination in the lowest grades especially the kindergarten and allied classes, of the younger children. On account of the frequency of communicable diseases among children varying from five to ten years of age, especial care is necessary to prevent the infecting of many from one or more sources and while the so-called school diseases have not to any great extent developed at this time, yet the detection at an early age of eye or ear defects or abnormalties of the respiratory tract, is of paramount importance and in addition to a physical examination at least once each term, daily inspection for the purpose of preventing various diseases from getting a foothold is most imperative. This is demanded not only as a general preventive of disease as among the higher grades, but is markedly so on account of the methods employed in teaching and amusing these children, as they are brought into close contact one with another and in many ways the opportunities for development of contagious diseases are here greatly enhanced.

As has been stated by Wright, medical inspection, if properly performed, seems to offer the best chances for lessening sickness in school children, and this statement seems well borne out in the comparatively short time that inspection has been in existence in a few cities. As regards diseases of the eye, ear, skin, upper respiratory tract, etc., a marked decline in the number of cases found in the schools must be self evident, as the majority of these affections respond readily to treatment and of necessity their detection by the inspector with the recommendation that the child is in need of medical advice, seems to be heeded by many parents with the resultant removal of the defects. New cases are constantly developing however and these in addition to those not cared for and new pupils entering the different classes, constantly adds to the number to be investigated by the inspector. In Chicago the result of this care of the school children has been a notable decrease in the mortality of diphtheria and scarlet fever as shown by the first year's work, when there was a decrease in the number of diphtheria cases of 628 for the year, while scarlet fever showed a decrease of 2,325. The records of the Health Department of Chicago showing a material decrease in contagious diseases among children, since medical inspection of schools was established. The same results have also been noted in other cities, while in Philadelphia for the month of January 1900, 480 cases of sore throat were reported, yet under school inspection for the following seven months there were but 1,040 cases, showing an average monthly decrease of 330 cases. Such a decrease also being noted in Newark, where the decline in the number of cases examined as well as in the number excluded from month to month, shows the good results of careful medical inspection.

One of the earliest facts which drew the attention of investigators to the health of school children was the predominance of eye affections and as a result, probably more attention has been directed along these lines than to any other affections of the health, until very recent years. Ware as early as 1812 showed that the school-room was a frequent cause of myopia and undoubtedly from the early recognition of eye defects in school children, medical inspection had its inception and gradual evolution It is impossible here to more than outline what has been done for the eyes, what has been found and to consider the subject briefly in its relations to the medical inspection of schools. As regards the eye affections of school

children, two broad classes may be differentiated for practical purposes, first, those diseases contagious or infections in nature of which purulent conjunctivitis is an example and which should be grouped with such diseases as erysipelas, ringworm, diseases of the scalp and scabies and in which the affected child should be excluded from school until cured, but differing from diphtheria, measles, etc., inasmuch as only the child affected is not permitted to attend school instead of this latter group of diseases, where all children in the same house are also excluded. These contagious eye affections are common in the schools and unless properly handled, give rise on frequent occasions to more or less disseminated epidemics. Their frequency may be judged from the fact that 55 cases were found in the Chicago schools during a period of four months; 113 cases were found in Boston in 1900; in 1890-91 an epidemic of follicular conjunctivitis in the schools of Dresden affected 10,000 children; 87 in New York in two weeks; 397 in Philadelphia in nine months and in Newark in four months 289 cases were found.

A more complex problem and one which has a great influence on the career of the pupil, is the various changes in the eye affecting the sight and accommodation. While tests sufficient to determine the presence or absence of a visual defect do not necessarily require the experience of an expert to properly perform them, yet they should be made by the physician to obtain the best results; as it is however this is usually performed by the teachers and even under these conditions the number of children with marked visual defects is somewhat enormous. In Philadelphia where this work has been in existence but a few months and therefore no statistics are available, the eyes are examined by means of suitable cards and a record is kept which will follow the child through its entire course at school. Similar methods are in force elsewhere and the results especially in Cleveland, have amply demonstrated the worth of the system. Previous to this in the former city, the medical inspectors found over 1,000 cases of defective vision, while the inspectors in Boston for 1900 found the following eye diseases in daily attendance at school: foreign bodies, 13; blepharitis, 23; stye, 14; ptosis, three; obstruction of lacrymal duct, four; diseases of conjunctiva, 113; interstitial keratitis, three; ulcer of cornea, 13; opacity of cornea, seven; iritis, three; stabismus, 12; nystagmus, three; imperfect sight without visible cause, 220; a total of 431 cases undetected at home, neglected and yet previous to inspection expected to be on a par with healthy pupils. Defects in sight are essentially the result of conditions at school, this of course does not imply that the sole cause of eye defects is the school, but many originate, others are increased and all may be rectified here. That school has a marked influence for harm upon the eye has been shown by the Swedish Commission, who found an increase in near sight from six in the lowest to 37.3 per cent. in the highest class and it was also found that this increase bore a direct relation to the length and amount of study. This is also shown by the researches of Cohen who in an examination of 10,000 children of all grades found one per cent. of myopia in country schools; 5.11 per cent. in elementary schools; 20.40 per cent. in grammar schools and 30.35 per cent in colleges. In 1896 Carter found among 8,125 children in the London schools, that only 39.15 per cent. presented normal vision. In the schools of this country the same results have been found and an abundant literature exists on this subject which it is unnecessary to quote here, but Calhoun found from the reports of examinations of 45,000 children, that near sight increases from nothing in the lowest to 60 and 70 per cent. in the highest classes. While in the Buffalo schools the percentage of visual defects increased at seven years of age from five, to 26 at 18 years and of the graduates of the high school 25 per cent. were near sighted. In the schools of Brooklyn the eye examinations showed that about one-third of the entire number examined were defective in this respect, varying in some districts to as high as 50 per cent., while in more favored localities was as low as 12 per cent. The deleterious effect of defective sight was also found in the fact that one-half of those deficient were above the average age of their grade, so that it is apparent that often the supposedly stupid pupils who make little or no headway in their studies are those incapacitated on account of defective vision.

Special attention has been given to the eyes in Cleveland and as a result of the examination of 32,939 pupils it was found that 6,169 or 18.7 per cent. had some defects. It is unnecessary to mention isolated instances of defective vision in its relation to school work, but many cases could be cited where the child made a failure in his studies until someone in school discovered that he could not see them when proper treatment had been applied, he would keep well up in the class and even outstrip the others previously considered his superior. This condition has been to a great extent remedied in a few cities, but only in a few and only a small number of children have derived the benefit, but under an efficient system as a part of medical inspection, the future of many a child would be materially brightened. The studies of Butler seem to sum up this matter of visual defects of school children in a most admirable manner; he says that refractive errors are extremely common being present in as high as 50 per cent.; these errors are of great importance on account of the immediate symptoms and disabilities which follow their neglect; they are important factors in the production of many painful and disabling affections common enough in childhood, but still more so in adult life; and their early correction is demanded not merely as a means of therapeutics, but as an important measure of preventive medicine.

Of the minor group of diseases as regards numbers which has come to the attention of the inspector, diseases of the ear and especially those attended with impairment of hearing have sug-

gested the importance of detecting the defects on account of the harmful influence exerted upon the pupil. Suppurative otitis media is quite commonly found in the school but bears no relation in its etiology to school work and is of importance to the medical inspector inasmuch as its detection is often followed by a complete change in the attitude of the pupil toward his studies. Unlike eye defects impaired hearing has no effect upon the general health of the individual, but it does seriously impair his ability to properly perform his school work. An illustration of this which may be duplicated more or less frequently in quite a number of schools, being related by A. K. Whitcomb, of a boy 13 years of age and still in the primary grade, utterly incapable of making any headway in his studies. On investigation it was found that his hearing was defective and by giving him proper care his success was phenomenal, as he soon outstripped those who were believed to be far his superiors. In Newark, 27 cases with suppurating ears were found in the schools; 87 in Philadelphia were deaf or had some ear disease; 87 were found in Boston, while from studies made by six observers, an average of 20.33 per cent. were found to have some impairment of hearing. Sexton found 13 per cent. had partial deafness and of these only three per cent. were aware of their difficulty in this respect. In the few places such as Cleveland where some attention has been given to the hearing, the tests have been made by the teacher, a practical method being that of Gale, by which the pupil with chalk in hand stands facing the blackboard and the teacher dictates isolated numbers or words which the pupil writes on the board. Should he not be able to hear properly, this will be readily detected. While this method is fairly satisfactory and enables a rough estimate to be made of the hearing capacity, yet it is far better to have the medical inspector make such examination of the pupils at the beginning of each term in conjunction with the visual examination and from time to time thereafter of all new scholars and of those suspected of having hearing defects.

Defects of breathing or chronic inflammations of the upper respiratory tract are exceedingly common and when of small degree apparently exercise little harmful influence, yet they have a tendency to increase in severity and also to be augmented by unhygienic surroundings. The child with enlarged tonsils or a naso-pharynx filled with adenoids is not capable of doing good work and the results of proper treatment of these cases, amply justifies the work of the inspector in detecting the disorder. Another factor which these children present, is the increased susceptibility which they afford to the dangers of contagious diseases, especially is this true of diphtheria and the child with catarrhal processes of the air passages, enlarged lymphoid glands of tonsils, not only is more liable to contract these contagious affections than is the healthy child, but his chances of recovery are also much less. As a result of the first year's examinations in the Boston schools, diseases of the throat constituted a large proportion of the diseases found in the children and 1,749 were so affected , while of 8,964 pupils examined at a later period, 3,934 suffered from oral and respiratory diseases. Durgin has forcibly called attention to the excessive prevalence of diseases of the respiratory tract in school children and he found that of 9,188 examined, 5,689 had acute or chronic diseases thus located, while for the year 1900, the inspectors found 2,609 oral and respiratory diseases; four months inspection in Chicago resulted in 689 cases of tonsilitis being found and at a later period 788 children were temporarily excluded for the same cause.

Among the conditions found in large numbers by the inspectors, parasitic and skin diseases have been especially prominent, in Chicago during the first few months of inspection, 193 cases of impetigo, 241 of pediculosis, 76 of ringworm and 48 of eczema were found, while in one year 1,289 such cases were denied attendance at school. Boston schools in 1900 contained 3,421 cases of all kinds of skin affections and so common is pediculosis, that the usual rule of referring the child home for treatment is abrogated and in addition to a special card to the parents stating the conditions, it also contains printed directions for killing the parasites accompanied with a printed prescription for petroleum to be used for this purpose. From October 1, 1901, to February 1, 1902, there were found in the schools of Newark 1,041 children with these affections, the greatest number being those classed as vermine of which there were 861 cases excluded, while in Philadelphia within a few months 1,282 cases of skin and parasitic diseases were found, the majority of which were communicable. So prevalent is it for these affections to be brought into the school and there disseminated especially by the uncleanly and poorer class of people, that quite extensive epidemics are occasionally produced.

Where the system of medical inspection is thorough and contemplates a complete supervision of the health of the pupils both as regards diseases that may be brought into school by them and those which may develop as the result of being at school, in contradistinction to inspection which has for its objects purely the elimination of contagious diseases, a group of so-called school diseases will come under the considertion of the inspector and demand considerable tact and patience before appreciable results will have been obtained. Such a group comprises the milder grades of spinal affections and a very large group of nervous affections or neurasthenic symptoms, the causes being as varied as the individuals that make up this class and cannot be noted here except that over study and improper posture are responsible in many instances. Mild grades of spinal deformities are largely incident to school life especially between the age of six and fourteen years and it is probably present in at least 10 to 20 per cent. of school girls; while frequently accompanied

with nervous disorders, headache, etc., it naturally keeps the affected individual handicapped and should be carefully watched for both by the teacher and the inspector. In 611 examinations Guillane found 30 per cent. affected with curvature of the spine, while in the schools of Cleveland a large percentage was discovered in the grammer grade rooms. As regards neurasthenic symptoms an increase approximately of from five to 50 per cent. has been found from the lower to the higher grades, so that by careful observation and suitable suggestions the inspector is capable of doing an immense amount of good in this single field alone. The very familiar "nerve sick" school child is unfortunately too common; in England, Warner found 11 per cent. and among the school children of New York, Hamilton found 20 per cent. with various neurasthenic phenomena, while in the higher schools of Moscow nearly 70 per cent. had some nervous malady.

Other diseases characterized by prominent nervous phenomena are also found by the medical inspector and are of import not only to the affected individual himself, but have a most demoralizing effect upon the children with which he is in contact. Epilepsy, chorea, etc., are the diseases to which I here wish to refer and while they exist in the school in but small numbers, yet for the sake of the individual and of those forced to witness paroxyms of these affections, they should be placed under other aspects than those of the public schools. An observer in Springfield (Mass.) found an epileptic and a typical moral degenerate in a single school room and the same observed justly says "right in the public schools is the successful fight against crime, insanity, epilepsy and feeble mindedness to be fought and the battle won, if properly waged." While another observer while in a well-kept school room, was suddenly startled by the sound of a falling body due to one of the scholars having an attack of epilepsy, which was of frequent occurrence. That these are not isolated cases and that such affections are present in the schools is shown by the medical examiner of Salt Lake City, where with but a single man doing the work and necessarily at infrequent intervals, five pupils mentally deficient were found and a girl suffering from epilepsy had to be excluded on account of the consternation produced by her attacks and the general unrest occasioned by the fear of their recurrence. While in Boston during 1900, there were found 14 cases of chorea and six of epilepsy and in Newark five cases of chorea were found and in both these places no special investigations were conducted for nervous affections.

A further duty of the inspector is his determination by personal examination of the presence or absence of a successful vaccination cicatrix on every child admitted to the school. In many places during the past three years on account of the prevalence of variola, this has been insisted on from time to time and its enforcement depends upon two factors, first the nature of the legal requirements in the city or state and secondly, the medical inspector. The future presence or absence of smallpox in this country will undoubtedly to a great extent be influenced by the successful vaccination of school children, the good effects observed from this measure being those due not only to the exemption of the school population from variola, but many parents are thus influenced favorably and will be vaccinated when they had refused before. As as essential requisite for entering school, vaccination should have the same place as other necessary requirements and should be legally insisted on.

One of the many indirect results of medical inspection especially where it has embraced more than the detection of communicable diseases, has been the effect upon the personal hygiene of the child, children who came to school unkempt and often unclean despite the efforts of the teacher to improve their condition, gradually improved in their personal appearance not only at school but they were also more cleanly at home. While this may in itself appear to be a trivial matter, yet it makes a considerable difference as regards such affections as pediculosis, skin disease, etc., and after the pupils realize that the efforts of the inspector are directed toward their good, the number of such communicable diseases will decrease to a great extent. While medical inspection has thus been of value in improving the personal hygiene of the scholar, it has also been of benefit to the teacher in enabling her to remove ill scholars and by detecting physical defects such as those of sight and hearing. It is surely easier to teach a normal individual than one ill, or unable to see or hear normally and for every child that has been helped by the detection and removal of these defects, the work of the teacher has been correspondingly lessened. It has also instructed her in various aspects of school sanitation and as she is necessarily a foster parent of the children under her care for the better part of the day and often a better foster parent than the real parent at home, by increasing her ability to detect an ailing child, the results have been most beneficial. What has been said in regard to the teacher and the pupil is also true to a considerable extent as regards the parents. Instances are continually being presented where a parent antagonistic to the measures at first, has soon seen their value and not only endeavored to detect the early signs of illness in their children at home instead of sending them to school, but the interest of the parents has been gained and a decided step has been made in showing them that preventive medicine has a place not only in the school, not only something which immediately concerns the physician and sanitarian, but it is an essential factor in the home.

In carrying out the ideas embodied in a system of medical inspection of schools, the relation of the individual scholar to the means employed for his education are considered as bearing upon his physical welfare and to obtain the best results from the educational point of view, the physical strength of the individual as regards his routine

work must be taken into serious consideration. As has been well said "education gained at the expense of health is a loss," yet each year many children pay the penalty by their lives and many thousands more by serious illnesses. In addition to inspection being a direct, practical and economical method of saving life, it is also of immeasurable value in demonstrating to the mass of people the necessity of preventing disease. In the majority of public schools little or no efforts are made to give instructions towards conserving health and detecting the early stages of the common and often fatal diseases, Michigan has however recognized the necessity for this measure and the so-called "Michigan idea" will well bear copying elsewhere. It consists essentially as a result of the law passed several years ago that "there shall be taught in every year, in every public school in Michigan, the principal modes by which each of the dangerous communicable diseases is spread and the best methods for the restriction and prevention of each such disease." The state board of health sends annually to each public school superintendent and teacher in the state, such printed information as will enable them to comply with the instructions of this wise law. Such a valuable measure in connection with medical inspection as here advocated, would without the least doubt be the means of preserving many lives which are annually lost for the want of such measures, without considering the enormous financial gains to the state.

Any measure which will preserve the resisting power of the individual against disease, is essentially based upon as sound a principle of prevention as is that which for the same reason, endeavors to keep disease away from the individual by preventing him coming into contact with cases of that particular affection. The tendency of the school leads in many instances to the physical deterioration of the pupil and while educators and sanitarians have been and are doing much to make the school surroundings as near ideal as possible, this factor of physical deterioration with its necessarily added risk of lowering resistance, still remains a force to be combated.

Thirty-two States and Territories have compulsory educational laws which compel the child beginning with its sixth, seventh or eighth year to begin its education, the vast majority in the public schools. The state in its relation to the school population thus taking the stand that the age factor is the sole requirement to begin school life and makes no provision for the safeguarding of the child from the communicable diseases with which laws compel it to be brought into almost daily contact. Many children present constant evidence by their impaired physical condition and by attacks of measles, whooping cough, diphtheria, etc., the latter group of diseases beginning to rapidly increase at the opening of each school term, that the age is not the only requirement necessary to commence school attendance. Education implies more than mental development, it also implies physical care and protection and while many communicable diseases will always be present in any community, yet the state should realize that health is a condition of citizenship and protection of the health of its child population, implies a better class of citizens for the future than would be the case were such protection not afforded. The State provides for its paupers who return nothing to it, it makes provision for their physical welfare, it protects them from communicable diseases, yet the school child the support of the State in the immediate future, receives no such care as is given to even the meanest pauper, while for a small outlay a system of preventive medicine could be inaugurated and supported, whose benefits both direct and indirect would effect a salutary influence over the entire populace.

Many a child dull, inattentive or apparently negligent in his studies, is punished for his seemingly continuous neglect and yet the experience derived from medical inspection has shown that the majority of these scholars have been so by reason of some physical defect especially of the eye and ear, the correction of which transformed them into bright, ambitious children. When it begins to be more fully realized that preventive medicine insists on a physical basis of education and that such a system reduces the penalties of education, then will punishment versus physical examination in the schools be a much easier problem than it is at present. In many ways preventive medicine has in the past few years taken a prominent position in the public school system especially from the hygienic aspects, such as the housing of the children in modern sanitary and well-lighted buildings, the diminution of the size of the class thus in a manner decreasing the tendency of close contact of large bodies of children, and also by the recognition of the individual and the adoption of other safeguards against disease, such as medical inspection. Whatever measures may be adopted to reduce both the morbidity and mortality of the school child, must be initiated in the school and the results will soon appear in the home. Medical inspection is not only a duty but it is a privilege, a privilege not limited to a class small in numbers, not to a single disease, but directly bears upon the health of over 20,000,000 individuals and by lessening disease among these, indirectly concerns the entire population and is directed against practically all acute and many chronic diseases which affect not only the child but also the adult. Public safety thereby as regards endemics or epidemics is a great gainer, not only by the prompt recognition and isolation of communicable diseases which medical inspection affords, but also by its educational benefits, is the community at large benefited.

Quite suggestive from the economic aspect is the relation between medical inspection and the extent of losses due to preventable ill-health and deaths. There can be no gainsaying but that preventive medicine adds vastly to national wealth both in the saving of life with its earning capacity and the lessened cost of fighting disease, as pre-

ventive measures become more generally adopted and the results become more apparent. While a low estimate of the value of a human life would be $1000, yet should one-half this sum be taken for such purposes, the saving of lives by properly exercised medical inspection alone, would be the means of placing a vast sum to the credit account of the nation. Another side of the economic aspect is furnished by the early detection and isolation of cases of contagious diseases such as diphtheria and scarlet fever and thus by greatly diminishing the number in this way, a financial saving of no small magnitude is effected not only to the individuals quarantined, but also to the health boards who expend considerable sums in effecting such measures. Disease means loss of money and medical inspection by reducing the number of cases of communicable diseases, means the reduction of this loss to a minimum. Wherever paid medical inspection has been tried it has proven to be a sound financial investment and instead of acting as a drain upon the public treasury, the reverse has been found to be the case. In New York City where inspection does not go beyond the detection of contagious diseases, it has "more than saved an excess in the value of coffins for the potter's field, to far more than pay for the expert service." The inspectors of Boston receive $200 a year; of Chicago $50 per month; and of Newark $250 per year, these figures representing the usual average cost per inspector, the total cost varying with the number employed. Wherever the system has been in operation the cost has proven to be comparatively small, while in Milwaukee the Commission of Health stated that the expense seemed so infinitely small in comparison with the enormous amount of good resulting therefrom, that it seems utterly impossible for any person to raise objections on this account.

Like other measures which have a direct bearing upon the prevention and transmission of disease, objections have from time to time been offered, but in the light of its successful operation have been found to be groundless. The principal objection being the cost but as just stated, experience has shown that it more than pays for itself. Other objections raised against it have been the supposed interference with the family physician, with the duties of the teacher and her control over the scholar and the interruption in the school routine each day by the coming of the inspector. It is unnecessary to more than briefly enumerate these, as they have all proven groundless and it has been the experience of those doing this work that both the teacher, the parents and the family physician have recognized its value within a short time after the inauguration of the service and have all aided in the movement. Finally as the success of the measure is to a considerable extent dependent upon the joint action of both the school and health authorities, it has been thought that it would be impossible to have both bodies act in harmony, but the reverse has always proven to be the case and as yet no valid objection of any weight has been offered against it. It is of interest in this connection to also note the legal status of medical inspection, as out of 76,805 examinations made in Chicago, there was but a single lawsuit instituted by parents and in this the only instance which I have been able to discover, Judge Ball of the Superior Court decided that the medical inspection of schools was constitutional and the rights of principals and medical inspectors to exclude pupils for cause, was upheld, the case not being appealed.

MEDICAL PROGRESS.

OBSTETRICS AND GYNECOLOGY.

Simultaneous Intra-uterine and Ectopic Pregnancy.—A case presenting these features is reported by RIVET (Gaz. Med. de Nantes). When first seen, the patient's symptoms pointed to a beginning appendicitis, but a more careful examination revealed the presence of a tumor which, together with the history of suppressed menses, suggested the possibility of a ruptured ectopic pregnancy. This diagnosis was confirmed upon operation, at which time it was noticed that the uterus was increased in size, softened and almost fluctuating and numerous large veins were seen upon its surface. In view of the fact that a certain amount of hypertrophy takes place in the uterus in ectopic gestation, no importance was attached to this condition; but three days after the operation a fetus was expelled from the uterus which was of the same age, though not as well formed, as that removed in the abdominal section.

Extra-uterine Pregnancy.—The history of a case of intra-abdominal extra-uterine pregnancy, delivered at term, of a living child, is reported by W. L. ESTES (Phil. Med. Jour., Dec. 13, 1902). The patient, a multipara, aged 30 years, conceived for the fifth time. The pregnancy was considered an ordinary one, only the fetal movements seemed a little different. The normal period for labor was passed, but a month later, during an exertion severe abdominal pains and weakness resulting. Labor was thought to have begun, but as no progress was made and patient was declining, she was sent into the hospital, where a diagnosis of extra-uterine pregnancy was made. Immediate operation revealed, on opening the abdomen, a gangrenous omentum, a ruptured fetal sac and the child lying free among the coils of small intestine. The child was quickly removed after clamping the cord, in a state of suspended animation but was soon revived. The sac was attached to the ascending and descending portions of the great omentum and their mesenteries, to the small intestine, to the right cornu of the uterus, broad ligament, rectum and pelvic fascia. The placenta was attached to the pelvic fascia over the right common iliac vessels and could not be removed. The sac was cleaned out, packed, and the edges stitched to the margins of the abdominal wound. The latter was then closed, leaving an opening for drainage. Patient died however on the thirteenth day from exhaustion. Child survived. Author believes that the placenta in most cases need not be removed and comments on the necessity of extensive drainage. Daily irrigations of the sac may be done through these openings and the placenta gradually exfoliated. If possible, drainage openings should be made in one or both lumbar regions.

Myoma of the Ovary.—True myoma of the ovary is perhaps the most rare of ovarian diseases: and

but few cases have been reported. J. M. BALDY (Am. Gyn., Nov., 1902) finds that the literature contains but eight such cases. The case of the author making the ninth. Mrs. D. T., colored, aged 36 years, married 15 years. Had had one pregnancy, which terminated in a miscarriage. Menstruation for the past dozen years had lasted five to seven days, and had been quite free. Three years ago her doctor had told her that she had a tumor, but it had given her no trouble except for an occasional hemorrhage, which would last perhaps as long as ten days. These had yielded to very simple treatment. Examination disclosed a multilocular cyst of the uterus, hard and with the ordinary characteristics of a fibroid. The history was that of an ordinary fibroid and operation was performed for that condition. The specimen after removal, consisted of a uterus enlarged by a multiple fibromyoma to the size of a small cocoanut. The right ovary was nowhere to be found. The left ovary was cystic. Where the fimbriated end of the fallopian tube disappears in the capsule at the top of the tumor, beneath the capsule, an exceedingly small piece of tissue was found which on section proved to be ovarian. The tumors in the uterus were ordinary fibromata. What is the significance of these facts? The first and all important question to decide, is or is not this a subperitoneal nodule of a fibroid uterus? There are but two lines on which such a nodule could develop at this point: First, subperitoneal, in which case it would be subperitoneal at all points of the tumor; Second, a pedunculated nodule, in which case it would come off the uterus and hang free in the pelvis, but would in no way attain the relations to the broad ligament which are held by the ovary or by this tumor on its upper surface. In either case how could we account for the disappearance of the ovarian ligament and the ovary? A broad-ligament tumor would have essentially different relations than those which pertain to this tumor. On the other hand, assuming that this tumor began to develop in the ovarian ligament or in the capsule of the ovary, every possible difficulty disappears and all its relations without exception, are accounted for.

The Mimicry of Pregnancy by Fibroids and Ovarian Tumors.—In examining a patient under forty-five years of age, with a pelvic tumor, every cautious observer invariably takes pains to assure himself first, that the tumor is not purely a physiological one, that is to say, that it is not a pregnancy pure and simple; and second, when a tumor is undoubtedly present, that it is not complicated by pregnancy. Nevertheless, says H. A. KELLY (Am. Gyn., Nov., 1902), large tumors have been mistaken for pregnancy by competent observers. There are four classes in which error in the diagnosis of pregnancy in consequence of mimicry has occurred: (*a*) Those in which there has been a pregnancy and no tumor; (*b*) those in which pregnancy has been complicated by a tumor; (*c*) those in which there has been a tumor but no pregnancy; (*d*) those in which there has been neither tumor nor pregnancy. It is in cases of hard abdominal tumors with ascites that a mistake in diagnosis is most liable to take place. The following are the most misleading factors in cases which are liable to be mistaken, either for pregnancy or tumors: (1) The patient may be very fat, making it most difficult to palpate and percuss an abdominal enlargement with precision; (2) the vagina may present a more or less characteristic violet discoloration; (3) the cervix may be soft; (4) the breasts may be enlarged, painful, and may contain fluid; (5) there may be a cessation of menstruation with more or less nausea; (6) the "Linea Nigra" may be well defined; (7) there may be a regular enlargement of the abdomen more or less closely corresponding to the calculated period of pregnancy; (8) the mass may closely resemble a fetus in the abdomen, presenting a head, body, and limbs; (9) the subjective sensation of movements may be prominent, and to the patient, a factor decisive beyond argument as to the existence of a pregnancy; (10) a perfect abdominal ballottment may be present. However a diagnosis can be made by a thorough examination which pays close attention to all the important signs of pregnancy. First and foremost the fetal heart sounds are always absent, and the pulsation of a tumor which may be mistaken for a fetus if the observer is careful to notice that they are synchronous with the radial pulse. This of itself is decisive. In the second place, even taking the list of mimicking signs given above, no one case presents all of them, and the omission of one or other of the usual important signs should put the observer at once on his guard. For example, it is a most suspicious fact when menstruation has continued through the supposed pregnancy. The author's experience is against this as being true. The presumption is strong against pregnancy when there is an unaltered hard cervix. Where the ascites seems to be present, a careful examination will make the diagnosis conclusive. A recto-vaginal examination under a brief gas anesthesia will clear up the diagnosis and reveal the uterine tumors or the small uterine body with ovarian tumors. Lastly a better knowledge of abdominal palpation in advanced pregnancy will almost always avoid an error in diagnosis.

The Bladder after Hysterectomy.—The intimate connection between the bladder and the uterus makes it easily understood that the bladder is greatly influenced in its circulation and function by all operations which serve to modify the topography of both of these organs. To begin with the simplest operation, the Alexander, says G. KOLISHER (Am. Jour. of Obstet., Dec., 1902), neither bimanual examination or cystoscopic examination, performed in different stages of dilatation of the bladder reveals abnormal conditions. Abdominal hysteropexy, ventrosuspension, and ventrofixation in some cases, seems to have a decided influence on the circulation and function of the bladder. The systoscopic examination in such cases revealed an extreme paleness of the mucosa; in some instances the epithelium seemed to be swollen and soaked. If we accept the theory that the desire for urinating is brought on by the stretching of the muscular coat of the bladder, it is easy to understand the hanging of the uterus high up will lead to more frequent calls to urinate. In the case of a virgin operated upon by abdominal hysteropexy, where the uterus was hung rather high, a few days following the operation, the urine became cloudy and micturition so frequent that the night's rest was disturbed. This condition has continued with some diminution for two years. Two cases of gonococcic infection of the bladder were much worse following the same operation and have resisted all therapeutic efforts to stop the trouble. If the bladder be properly stripped from the uterus the bladder will remain intact. The dislocation of the bladder itself does not interfere with its function, if no special complications arise. Quite interesting and peculiar conditions arise if vaginal fixation is performed on account of prolapse and cystocele. In the author's three cases, all of which had had chronic retention within the cystocele, the bladder is spontaneously and completely emptied at each micturition since the operation. If the uterus be stitched too low down to the vagina, it pulls the vaginal wall and consequently the posterior wall of the urethra in such a direction as to distend the urethra posteriorly.

This portion of the urethra is now the mainstay of the continence, and, if weakened, the continence will be impaired. Prompt and definite relief was furnished by the introduction of a pessary.

Craniotomy.—In discussing this most interesting subject, J. D. VOORHEES (Am. Jour. of Obstet., Dec., 1902) comes to the following conclusions as to the propriety and advantages in the operation: (1) Craniotomy is an operation of great usefulness, but one whose field has been narrowed to cases where the child is dead, except on occasions of great emergency and where the mother's life would be jeopardized by a cutting operation; (2) that the operation of itself should be attended with practically no mortality in the hands of a careful operator; (3) that the cutting operations, especially Cesarian section, should be done more frequently in proper cases, inasmuch as the maternal mortality has been reduced almost to nothing in the improvement of the technic of these operations, and inasmuch as almost every baby can be saved.

Puberty in the Girl.—Children, male and female, are much alike up to the period of puberty, says G. W. COOK (Am. Jour. of Obstet., Dec., 1902). They exercise alike, romping and playing together without restraint, but as soon as sexual peculiarities are assumed a marked change is manifest. The girl's whole manner and physic are changed. Her flat and narrow chest expands into a better and more capacious bust for the better accommodation of heart and lungs, and the pelvis increases in its proportions. Menstruation begins and she is perfect. But what do we find as a result of the artificial conditions which surround her? Instead of the beautiful and blooming creature that she should be by nature, her development is far below what is expected, and her menstrual flow is spasmodically and imperfectly performed. To what is this defective development to be attributed? To the "pursuit of knowledge," and the attainment of the fashionable accomplishment, which prevents her taking time to acquire the proper knowledge of how to take care of her body. Instead of urging the pubescent girl to use every endeavor to keep up with her classes, let her be restricted to a very limited amount of study, and see that she be kept out of doors and gain health. Let her eat good wholesome food instead of filling her stomach with as much trash as she will eat. Let her be clothed in proper raiment, untrammeled by stays and trains, and she stands before us graceful and beautiful. "The bearing and the training of a child is woman's wisdom."

Operations upon the Appendages for Sterility.—A laparotomy is an operation which always carries with it considerable risk to life, and the question in regard to the advisability of interference simply for the restoration of this function will depend largely upon the urgency of the desire or necessity for offspring and must be settled according to the exigencies of the individual case. W. M. POLK (Med. Rec., Dec. 6, 1902) reviews a number of instances in which remarkable results have been obtained when previous chronic inflammatory conditions have so changed the ovaries and tubes as to make pregnancy inpossible. The operation will undoubtedly become more and more popular as the danger to life decreases. Simply freeing the uterus and appendages when these are bound by adhesions is sometimes sufficient to restore the function. When the ovary is diseased it should be our aim to leave as much as possible of the normal organ and it has been found that even a small portion may suffice. If a hydro-, pyo-, or hematosalpinx exists it must necessarily be removed, but the cut end may be left free or sutured to the ovary. Everting the opened end and stitching the lining membrane to the outer surface seems necessary when any part of the infundibulum is to remain or when the fimbriæ have been destroyed. When the entire infundibulum is removed the pouting mucous membrane appears to be sufficient to insure potency, but even if it should not be, the surface is too minute to tolerate the added irritation of a suture.

Concealed Accidental Hemorrhage.—This is an interesting and dangerous condition, and it is customary to meet it under circumstances quite different from those of the following case reported by J. W. INGLES (Lancet, Dec. 5, 1902). The patient was a full-time, healthy multipara, aged forty years. The author was called to attend her in confinement about 10 A. M. He went immediately, and was told by the midwife, who was in attendance and had been the greater part of the previous night, that the patient was all right and was making satisfactory progress and that the "colors had broken," but that she did not think the child would be born for some time. He examined the patient and found her pulse to be beating 112 per minute and soft. She was having strong pains regularly, which were to all appearances normal, but the patient said that she did not think they were real labor pains. Her general appearance seemed normal. He then examined the abdomen, which was globular. The fetus could not be made out, but what aroused his suspicions was the fact that immediately upon putting the hand on the patient's abdomen there was an obscure feeling of crepitus similar to that which is felt in a severe bruise with extravasated blood, but by no means distinct. He concluded that the uterus might contain blood, and found on inquiry that the patient was as a rule "full-blooded"; also that she had been stretching herself while papering a room on the previous day and had not felt well since. The author then asked to see all the clothes and cloths she had used and blood she had lost, if any. He was shown 40 drops on a clean linen cloth which she had used; there was no blood-serum or mucus. This was what the attendant had in her mind when she said that the "colors had broken." The blood drops were perfectly clear and fresh. On examination per vaginam, the passages were found to be normal; the os was normal and dilated to admit two fingers while nothing unusual was to be felt in the vicinity. The presentation was normal and the membranes were intact, but my fingers after the examination had on them a little fresh blood. There was no hemorrhage taking place externally. Taking into consideration the patient's previous day's work, her pulse, her pallor, which was not abnormal, but for the fact that the woman was in health, "full-blooded," the fact that her pains were not in character what they ought to be, according to the patient's statement, the freshness of the few drops of blood which were external, and more especially the slight obscure crepitus on palpation and the globular appearance of the abdomen, the author concluded that this was a case not met with by the general practitioner—namely, a case of concealed accidental hemorrhage. He decided that immediate delivery was the best course to adopt, so sent for assistance and proceeded to dilate the os with his fingers. During this time no blood escaped externally. By the time assistance had arrived the os was well dilated. The membranes were ruptured and liquor amnii escaped, mixed with blood. By this time the pulse was occasionally imperceptible, and the forceps were put on, and when the first blade passed the head, blood poured out. The child was immediately delivered, and along with it the cord, membranes and placenta came away, all in one. The child was dead, and the placenta looked as if it had been separated for some time. Following this, the uterus, which was full of

clots, was emptied of blood and well contracted by manipulation and ergot. No blood was lost after this, and contraction was obtained immediately after the uterus was emptied. The patient had the same appearance and her mind remained very clear. Her pulse varied, being sometimes perceptible and sometimes imperceptible. She was given stimulants constantly. Saline rectal injections were given, but the poor woman gradually became pulseless and collapsed.

Polyhydramnios.—By polyhydramnios is meant more than two pints of amniotic fluid at full term, says E. P. DAVIS (Ann. of Gyn. and Ped., Dec., 1902). The placenta is often large, dropsical, amnion and chorion thickened and fissures may occur in the epithelial layer of the amnion. Any fetal condition causing venous engorgement tends to produce polyhydramnios. The diagnosis depends on the determination of pregnancy, and we can usually detect faint uterine contraction, or can insert a finger through the cervix and detect a presenting part. Polyhydramnios may complicate ectopic gestation as well as intra-uterine pregnancy. When pregnancy is ascertained other collections of fluid associated with pregnancy must be differentiated from, as ascites and ovarian cyst, or pleural pregnancy, hydatid mole, a large child or a malformed fetus. In ascites the dulness changes when the position of the patient is altered; in hydatid mole the pear-shaped uterus has little fluctuation and there is repeated discharge of blood; a large or malformed fetus is revealed by palpation. There is a noteworthy absence of such tension upon the membranes as would be expected from the quantity of amniotic fluid. Polyhydramnios is dangerous from over-distention, relaxation, hemorrhage and increased danger of sepsis. Labor may be precipitated and should not be induced unless the distention increases so rapidly as to impair the woman's health. After labor the uterus must be made to contract with a hot intra-uterine douche of one-per-cent. lysol, tamponing with gauze, the hypodermatic injection of strychnine and ergot and other measures. Occasionally the excess of fluid disappears by absorption.

The Hereditary and Intra-uterine Transmission of Agglutinating Properties and Formation of Agglutinins by a Fetus.—The experiments performed by Dr. YUREVITCH (Bolnit. Gaz. Bot., No. 44, 1902) with typhoid bacilli on rabbits and guinea-pigs. In one series of animals the immunization took place before the animals became pregnant and in the others during pregnancy. The results of his experiments show that agglutinins from the blood of the mother is directly distributed to the blood of the fetus. This takes place even if one does not immunize the mother, but inject intravenously agglutinins. But on the other hand, the fetus also acquires the power to form agglutinins, and this property it retains long after it is born. Occasionally the serum of the fetus is a great deal stronger in its agglutinating power than the serum of the mother.

EYE, EAR, NOSE AND THROAT.

Easy Diagnosis of Eye Inflammation.—Starting on the assumption that the red appearance of the eyeball is common to most eye inflammations, WOOD and WOODRUFF (Med. Stand., Dec., 1902) offer a scheme for readily distinguishing the commoner forms of eye inflammation from one another and from non-inflammatory affections. The three main types are: (*a*) Eyeball wholly or partly reddened without discomfort or other symptom. (*b*) reddened and uncomfortable, but without actual pain. (*c*) red and distinctly painful. The only condition under (*a*) is subconjunctival hemorrhage, which is innocent unless recurrent or in patients over forty (suspect Bright's disease or heart lesion). In class (*b*) are hyperemia, foreign body, phlyctenular and most forms of acute and chronic conjunctivitis. In hyperemia the everted lids are redder than the ocular conjunctiva, there may be smarting, itching, or a foreign body sensation, and there is no secretion except a little at the inner canthus. If there is a scratching sensation look for foreign body. Phlyctenules or pimples are commonly seen on the surface of the globe surrounded by blood-vessels, and are easily recognized. In most forms of acute and chronic conjunctivitis there are smarting, burning, of foreign body sensations, mucous or muco-purulent discharge which glues the lids together in the morning, injection and swelling of the conjunctiva and a loss of its transparency. The intra-ocular tension is normal, and the redness does not usually extend to the margin of the cornea. The red and painful eyeball (*c*) is seen in iritis, glaucoma, phlyctenules of the cornea, ulcer of cornea, scleritis, episcleritis, ocular neuralgia and gonorrheal conjunctivitis. In iritis the redness begins in the corneal region, the eyeball is tender to touch both in eye and above it, there are photophobia and a copious flow of tears and the pain is worse toward evening. The pupil is contracted. In glaucoma the pain occurs in attacks during which the tension is markedly increased. There is but little secretion and slight photophobia and the pupil is normal in size or dilated. Phlyctenules of the cornea occur in childhood, and are accompanied by intense photophobia (blepharospasm), a copious watery discharge, and the "snuffles." Ulcer of the cornea is easily detected, especially with the fluorescein test. Scleritis and episcleritis cause pinkish-red (not deep red) exudates with little or no secretion, are usually rheumatic, and when cured leave a purplish stain. Ocular neuralgia is unilateral, with no eye symptoms except pain and slight redness. Gonorrheal ophthalmia is known by the intense injection and edema of the conjunctivæ, great swelling of the lids, profuse purulent discharge and the history of gonorrhea.

Laryngeal Carcinoma Cured by the X-Rays.—A case which is supposed to be the first to be cured by the Roentgen rays is reported by W. SCHEPPEGRELL (N. Y. Med Jour., Dec. 6, 1902). The tumor had reached a size which interfered seriously with respirations and had involved so much of the larynx that a radical operation seemed almost useless. The X-rays were used mainly to satisfy the desire of the patient, and were applied to the laryngeal region of the neck, reliance being placed upon their penetrating qualities for their effect upon the intra-laryngeal tumor. Twenty applications were made, and as the only benefit observable was the diminution of pain the patient was sent home with the introduction to return at the end of two weeks if he thought he had been improved. At the end of that time upon examination it was found that the tumor had almost entirely disappeared, and the symptoms of dyspnea, expectoration and fever had abated. After two weeks more of treatment the ulceration had entirely healed. An examination two months later showed the larynx to be in excellent condition except for the loss of tissue of the left vocal cord due to the previous ulceration. Of course, it is still too soon to prognosticate a permanent cure.

Proper Drainage of Tears.—Most methods of operation the tear duct for the permanent establishment of the drainage of tears have been found unsatisfactory. Continuous probing of a strictured duct is not only painful, but usually ineffectual, and induration and new tissue formation often follows the use of the ordinary probes. A new system of graduated probes has been devised by J. W. WAMSLEY (Phil. Med. Jour.,

Dec. 20, 1902). These can be retained in the canal, and permit healing to take place about the probe, rather than have it repeatedly stretched and bruised by frequent probing. They are made of copper wire, gold plated and highly polished, ranging in length from 32 to 40 mm. and in diameter from No. 19 to No. 6, English standard wire gauge. One end is bent at a right angle and rests in the canaliculus. After probing the duct with a fine wire probe, one of these may be introduced and left in place for several days to be succeeded by increasing sizes. Only the first introduction is usually painful. It is sometimes necessary when the stricture recurs to provide a tube for draining the tears into tne nose. The author has modified the ordinary tube by making the beak longer and the opening at the bottom angular and pointing anteriorly. He also recommends the use of a tube which is flexible, and has devised one made of No. 30 gold wire, which is carefully wound over a probe which corresponds in length and diameter to the size of the canal. This may also be left in place in the canal, and can be readily introduced or extracted by a simple form of probe which has been made for the purpose.

Hypopyon Kerato-iritis.—The destructive nature of this disease, as regards the vision of the affected eye, is well known. Therefore, treatment of it, especially of severe forms, is important. A new departure in the management of this disease is noted by G. H. BURNHAM (Lancet, Dec. 6, 1902). He had three cases of the disease, in each of which the duration of time since the onset of the disorder varied from three to eight weeks, so that the affection had become thoroughly seated, including a severe cyclitis as well. The infiltration in each case occupied the center of the cornea to an extent larger than the area of the pupil, and the pus in the anterior chamber was on a level with the lower margin of the pupil The pupil was also bound down, and dilated but little, if at all, under the use of atropine. The eyeball was deeply injected, and the pain was severe and long-continued. The treatment always advocated and relied upon is the local, and internal, *i.e.*, constitutional remedies occupy a secondary place. He does not rehearse the list of local remedies, which is long, and in many ways, of great merit. However, in the type of which he is speaking, where the corneal tissue is so extensively diseased, their use often fails to check the downward progress, or, if it does, so tardily that great damage is the outcome. His treatment is purely constitutional, save the dropping into the eye of a four-grain solution once every day or every second day, of atropine, and the casual bathing of the eye with a little hot water or boric acid. It consists in the use of his combined treatment, viz.: mercury and iodide of potassium taken internally, and pilocarpine given hypodermically. The upward trend of the disease has soon shown itself in the pain being quickly relieved, in the infiltration having a sharper margin, in the pus in the anterior chamber lessening, and in the surrounding healthy cornea becoming brighter and clearer. And, moreover, the improvement once established, always lasts, *i.e.*, no relapse takes place. In one case that came very late under the author's care, and looked very desperate before the disease could be checked, a leakage began to take place through the ulcer, so that the iris lay against the cornea. Even here the result turned out well, and the adherent tissue has gradually given away, so that now there is a very fair anterior chamber. In this treatment, moreover, the opacity left keeps ever growing less in size and denseness, so that finally it will disappear or only a non-disfiguring opacity be left. This treatment has several excellent features: the rapid relief of pain, the cure of the diseased condition with at least as great certainty as by the other methods, if not with greater, the gradual and uniform removal of the corneal opacity, and the absence of any pain immediately associated with the form of treatment used.

On the Local Action of Trichloracetic Acid.—CARL MUND (Arch. of Otol., Oct., 1902) translates Dr. Hugo Schwabe's article on the above subject of scientific value for the definiteness of its information by experiment on animals as well as on both dead and living human tissue. Conclusions are these: This acid entirely lacks the property of deep action on tissues. Clinical reports of its action on nasal mucous membranes speak of the characteristic absence of inflammatory reaction. He cites the experiments of others and gives his own. In both animals and on human tissues he found that only the epithelial layers and the uppermost layers of the mucosa had been destroyed unless deep mechanical pressure were used in applying it. He noted that the action of the acid ceased at the glandular ducts, these being apparently closed while the epithelium in the depth of the ducts was intact. Action on tonsils was also superficial and not destructive of deeper tissues. But its superficial action he regards as valuable as a protective in place of a dressing or bandage, and is indicated in hay-fever and other conditions with too-abundant secretion, which it checks by uniting with the albumin of the secretion and preventing escape of the fluid discharge for several days. After that it needs to be repeated for this effect. Use of it for deep cautery, therefore, is a disappointment.

Post-operative Management of Intra-nasal Surgery.—In the Laryngoscope, Oct., 1902, M. A. GOLDSTEIN recommends cleansing the nasal passages anteriorly and posteriorly by a warm alkaline solution before any operation, deprecating neglect of this and of the protective dressing when operations are done on cold days. He uses a nasal plug or tampon after every operation, to be carefully adapted to the entire surface of operation, previously saturated in benzoinol and covered with vaseline. It adapts itself easily to the crevices and curvatures, does not saturate by hemorrhage as dry cotton does, and is easily and without harm to the tissues removed. For pressure purposes he would substitute Simpson's prepared compressed cotton splint, whose thinness and absorbing qualities are needed. This dressing also favors healing without undue granulation. Would not leave a first dressing longer than 48 hours. In bleeding from posterior end of inferior turbinate he would pack with gauze introduced through the naris by forceps curved on the flat and adjusted by the forefinger of the other hand introduced behind the palate. Especially in operations for removal of the middle turbinate would he require packing with Simpson's splint covered with gutta-percha tissue. He speaks commendably of Lutz's splint of malleable gutta-percha. After the Asch operation he uses the compressed cotton splint changed every other day.

Methods of Using Argyrol.—Under this title a paper was read before the Tri-State Medical Society by A. C. BARNES, (Jour. of Eye, Ear and Throat Diseases, Sept.-Oct., 1902), in which he advocates its use as follows: In diseases of the eye, where formerly silver nitrate or protargol were used, because of deep penetrative action and unirritating properties, a 20-per-cent. solution of argyrol corresponds to a 10-per-cent. solution of silver nitrate, yet it may be dropped into the normal eye without irritation or discomfort. In purulent conjunctivitis a 25-per-cent. solution is to be used for routine work. Ophthalmia neonatorum thus treated, he claims, will be eradicated in two or three days. A 50-per-cent. solution may be used in severe cases of gonorrheal ophthalmia, instilled every two or three

hours. In nose and throat use 10-per-cent. solution accomplished better results than the silver nitrate, without causing the harsh and dry sensation of the latter. It reduced the thickness of the lumpy secretions from the nose. In chronic purulent otitis media, 50-per-cent. solution modifies the purulency to a mucoid discharge. It is unirritating and efficient in genito-urinary infections and inflammations; also, in specific urethritis. Kevin uses 10 per cent. in urethra and bladder and 1 to 2,000 or 1 to 1,000 for vaginal douche. It is not chemically changed as is silver nitrate by the secretions. It has deeper penetrative power, carrying the effects of the silver into the deeper submucous structures. It does not destroy tissue in almost any strength used.

PEDIATRICS.

Prevention of Summer Diarrhea.—Perhaps no better results in preventive medicine can be shown than those which have followed the careful attention in feeding and watching tenement infants. The infant mortality from intestinal derangements has oftentimes been astounding in many of our larger cities during the summer months and the most regretable part of it all is that it is largely unnecessary. C. G. KERLEY and J. L. HUGHES (N. Y. Med. Jour., Nov. 22, 1902) in their hospital and dispensary work have had opportunities to observe most satisfactory results from their attempts to educate the poor and ignorant mothers who are always anxious to do their part in saving their children's lives, if sufficient interest and exactness is displayed by the attending physicians. Each mother is impressed with the necessity of using only the best and cleanest milk and provision has now been made so that even the poor may obtain this. When the first symptom of stomach or intestinal disturbance is noted the milk-diet is at once stopped by the mother and an equal quantity of barley gruel is substituted. A small dose of castor oil is also given and the child either brought to the dispensary or physician. If there is vomiting, calomel in one-tenth grain doses is given for six or eight doses. If there is diarrhea the following mixture is given every two hours:

℞ Bismuth Salicyl..... gr.j
Bismuth Subnit..... gr.x
Arom. Syr. Rhei..:..... ♏iij
Aquæ q.s. ad..... ℥i

When the stools and temperature warrant it, the milk diet is very gradually resumed. During the past summer fifty tenement children, all under one year old, were chosen at random and careful instructions were given the mothers in regard to feeding and reporting any untoward symptom to an attending physician. Among these there was not one death. It is reasonably believed that not more than one or two per cent. of summer diarrhea cases should be lost, if proper prophylactic measures are taken.

Acute Plumbism in an Infant.—Poisoning through indirect channels and by accident in children with lead is rather a medical curiosity. The following remarkable example of lead poisoning in an infant is reported by H. C. CADMAN (Lancet, Nov. 29, 1902). On Nov. 8, he was called to see an infant, five weeks old, who had been very constipated for several days, and for some time had been losing flesh; he had had several attacks of colic, and vomited curdled milk. In such cases the author makes it a point to look to the condition of the feeding-bottle, if one is used, but in this case the infant was suckled by the mother, who was a healthy-looking woman. The abdomen of the child was hard and swollen, and the umbilicus was contracted, but not the abdomen itself. The child's general appearance was unusual. He looked too ill to be suffering from ordinary stomach ache, and his face had such a peculiar gray color that he might have been actually dying then. Nothing to indicate obstruction could be felt in the abdomen. Hot flannels were ordered, and three powders given, consisting of one-eighth of a grain of compound powder of ipecac and 2½ grains of carbonate of bismuth, a teaspoonful of castor oil to be taken previously. He also directed the mother to give up nursing for 24 hours, and to give the infant barley water with a spoon. On the ninth the bowels had been moved; the child had been fairly free from pain, and had only taken one powder, as these were only to be taken if pain came on again. The barley water was ordered to be continued and no breast milk to be given. On the tenth the child looked rather better; the abdomen was not so hard, he had had another attack of colic, but not so severe, and had taken another powder. He had vomited. The author had given permission for the mother to give him the breast again. On her preparing to do this, he noticed that she had a piece of lead over the nipple, and on her taking this off, I saw that the milk had dissolved some of the lead; the skin of the nipple was sodden and white, looking like skin after lead lotion had been used. It became evident that the infant was suffering from lead poisoning. On Nov. 11 a piece of a napkin saturated with the infant's urine was sent to a competent chemist who boiled it in distilled water, and found that the resulting liquid, when evaporated to a small bulk and treated with potassium bichromate yielded distinct precipitate of yellow chromate of lead. Another portion of the same liquid, treated with potassium iodide, yielded distinct crystals of iodide of lead in golden-yellow, flat, square plates. A piece of the napkin placed in the sulphureted hydrogen showed several black specks of sulphide of lead. The child is improving.

Sarcoma of the Kidney.—Notes of a case of sarcoma of the kidney in a four-year-old child, in which nephrotomy and recovery are reported by T. J. WALKER (Lancet, Nov. 29, 1902). The child was taken to a physician on Sept. 26, suffering from pain in the abdomen, diarrhea and inability to pass urine. The physician found the bladder, distended, a high temperature (103.8° F.) and pain in the left iliac fosa. The child was sent home and put to bed, and a trained nurse was engaged. The catheter was required for four days, when frequent micturition set in. The temperature ran up each evening to 103° F. There were some pain and distinct swelling in the upper part of the right iliac fossa. A provisional diagnosis of appendicitis was made. On October 10 there were slight distention of the bowels and a tumor in the abdomen at the junction of the lumbar and iliac region, the most prominent part being above the line from the umbilicus to the anterior spine of the ilium. The chart showed an evening temperature of close on to 104° F., with an occasional drop for 24 hours. The tumor could not be made out in the lumbar region behind, and the author concluded that it was inflammatory. The patient remained in much the same state up to a week later. The tumor then was more prominent. Percussion did not much assist the diagnosis, and the author determined to explore. He made an incision and opened the peritoneum sufficiently to introduce the finger. He found the tumor retroperitoneal, extending from beneath the liver into the iliac fossa, and across the spine beneath the middle line. Being satisfied that the growth was renal, he closed the peritoneal cavity, made a T-shaped extension of the incision, and with considerable difficulty enucleated and removed the kidney. The child bore the operation well and made an

uninterrupted recovery, the temperature falling after the operation and remaining normal or subnormal. The kidney was infiltrated with sarcoma; it was of the size of the author's half-closed hand.

PHYSIOLOGY.

The Mechanism of the Retention of Chlorides.—The disappearance of chlorides from fever urines, according to T. SOLLMAN (Am. Jour. Phys., Dec. 1, 1902), is due practically entirely to the deficiency of chloride income. The mechanism of the retention of chlorides is not explained by any physical theory, but must be a vital process. Less secretion and increased reabsorption are probably both concerned in the retention. The filtration theory of urine formation is inadequate.

Potassium Cyanide and Unfertilized Eggs.—The discovery that by means of weak solutions of potassium cyanide he could prolong the life of the unfertilized eggs of the sea-urchin, led Loeb to interpret the action of this drug as an inhibition of the catalytic processes that result in necrobiosis or death. F. B. GORHAM and R. W. TOWER (Am. Jour. Phys., Dec. 1, 1902), as the result of a series of researches at the Marine Biological Laboratory, Woods Hole, Mass., conclude that the action of potassium cyanide is only an indirect one, *i.e.*, killing or inhibiting the bacteria and thus giving the eggs a more favorable environment. In all experiments with unsterilized sea-water the protozoa enter as an important bacteria-destroying factor which must be considered in interpreting the results. Sterile sea-water prolongs the life of the egg of the sea-urchin much longer than Loeb's most favorable cyanide solutions. Both the experiments of the authors and those of Loeb show that too strong solutions of potassium cyanide and too long exposure to weak solutions soon kill the egg. From this the interpretation is that potassium cyanide is a poison for all living matter but it acts more quickly on bacteria than on sea-urchin's eggs; it is in no sense a prolonger of life. From the fact that unfertilized eggs can be kept in sterile sea-water for eleven days or longer, it would seem that the specific mortal processes of Loeb are as yet hypothetical phenomena without any definite experimental basis.

THERAPEUTICS.

Hyoscine in Treatment of Drug Habit.—On account of the recent literature upon hyoscine in the treatment of drug habits, H. C. RUSSELL (Med. Rec., Nov. 29, 1902) reports a case of a morphine and cocaine habitué who at one time was using 60 grains of morphine daily. Hyoscine hydrobromate in doses of one one-hundredth grain to three two-hundredths grain were given hypodermically once or twice daily, combined with strychnine and digitalis, according to the need for stimulation and at the end of three weeks the patient was discharged apparently completely cured of the desire for either drug. During the first few days he was kept in a somewhat stuporous condition by the use of hyoscine.

Incontinence of Urine and Epidural Injections.—The method of Cathelin was practised in nine cases of enuresis by M. LOUMEAU (La Méd. Mod., Nov. 12, 1902). In eight cases the treatment gave good results; these were cases of nocturnal infantile incontinence with diurnal pollakiuria. In the ninth case the incontinence was permanent as the result of excessive urethral dilatation; treatment in this case should of course be surgical. Among the eight cases first mentioned four were promptly cured and have had no trouble for several months. In the other cases the diurnal pollakiuria disappeared promptly and the nocturnal trouble has become less frequent. These results were particularly gratifying because all these cases had proven refractory to the medical treatment usual in the treatment of enuresis. In the introduction of the serum or the cocaine solution the sacral route was utilized.

Therapeutic Value of Bismutose.—Bismutose is an albuminous compound of bismuth which is supposed to lack the toxic action of other salts of this metal. It is a fine, yellowish powder, not soluble in water and free from odor and taste. The gastric juice does not affect it so that it may pass the stomach unaltered; the pancreatic juice has a slight solvent action which can however be disregarded. H. STARCK (Münch. med. Woch., Nov. 25, 1902) finds that the drug is a better astringent than other salts and is more serviceable in the treatment of gastric ulcer, since it combines more readily with acids. Its best effects are however seen in cholera morbus and in the acute gastritis and acute and chronic gastro-enteritis of children. Even infants do not object to it. The usual dose is six to 10 grams daily in frequently repeated doses of one-half to one gram.

Injections of Mercuric Bichloride in Puerperal Septicemia.—Injections of corrosive sublimate into the median basilic vein yielded excellent results in a case reported by T. SILVESTRI (Policlin., Nov. 22, 1902). Five mgr. of the drug was used in the first injection, and daily injections in decreasing doses were given for three days, till but two mgr. were used. No toxic effects were seen even after the five mgr. dose, and Silvestri feels that his method of treatment would be of value in all septic cases.

Guaco in Eruptive Fevers.—Attention is called to the merits of this drug by L. BUTTE (Jour. Med., Paris, Nov. 30, 1902). Its antipruritic qualities he found most advantageous in measles and scarlet fever; the remedy being used internally and externally. A "maceration" of guaco applied to the skin is said to cause a transitory hyperemia followed by prolonged anemia, with alleviation of itching and consequent lessening of restlessness. The eruption is also believed to subside earlier under this treatment. Internally, syrup of guaco is to be given, a teaspoonful to a dessertspoonful three or four times daily.

Hypochlorhydric Dyspepsia.—The treatment of this condition is thus outlined by O. LEMOINE (Nord. Méd., Dec. 1, 1902). For the immediate relief of symptoms, a tablespoonful, at the beginning of each meal, of the following: Distilled water, 300 gr.; hydrochloric acid, 4 gr. To stimulate secretion of hydrochloric acid and pepsin, a bitter, preferably quinine, as, bromhydrate of quinine, one gr.; syrup of bitter orange peel, 150 gr. A teaspoonful in hot water a half-hour before meals. For the stimulation of the musculature of the stomach, a pill containing powdered ipecac and nux vomica, of each .02, to be taken a half-hour before eating. This has almost invariably given excellent results in the author's hands. As an antifermentative sulphur acts well and assists in overcoming the constipation which usually accompanies this condition. This the doctor gives in a cachet containing washed sulphur and magnesia, of each .50, two being given daily; one an hour or two after meals. If treatment of constipation be necessary, full, warm irrigation of the bowel every night is preferred; as it has been found that a muco-membranous enterocolitis is common in this condition. If there be much distention of the stomach, massage is to be practised. This the patient may himself perform by crossing the hands over the abdomen and pressing the stomach upward under the false ribs; this is believed to assist the restoration of vitality to the musculature.

THE MEDICAL NEWS.

A WEEKLY JOURNAL

OF MEDICAL SCIENCE.

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SATURDAY, JANUARY 24, 1903.

THE AIR IN THE SUBWAYS.

WITH the prospect of a speedy termination of the frightful upheaval of the New York city streets looming close, the question of its interior ventilation is one of paramount importance.

The recent experiences in the "tuppenny tube," London's latest underground railway, is one which calls for urgent discussion and enhances the desirability of a thorough understanding of what provision is being made by our subway engineers.

In London it has been noted that many passengers, especially those who were riding long distances in the underground electric, suffered from intense headaches and even symptoms of air hunger. So many were affected that an investigation became imperative and it was found that the amount of carbonic dioxide gas in the tunnel was in great excess of the normal limits.

Some recent figures that are presumably authentic we present herewith. During hours of limited traffic:

	Carbonic acid in 10,000 volumes of air.
On platforms at 8:15 A.M.	4.23
On platforms (Saturday), 7 P.M.	3.74
In elevator, 10:10 A.M.	7.36
In cars, 9:30 A.M., from city	4.33
In cars, 1:30 P.M., from city	5.33

During hours of heavy traffic:

On platforms, 4 to 7 P.M.	11.04
In cars, 9:30 A.M., to city	16.65
In cars, 4 to 5 P.M., from city	13.74
In cars, 6 to 6:45 P.M., from city	15.54
In cars, 6:10 P.M., from city	20.46

The carbonic acid tests were made between December 11 and 15. The range of outside temperature was between 37° and 56° F. The range of temperatures on the platforms was between 56° and 76° F. and in the cars between 66° and 76° F. The barometric pressure throughout the period of the experiment was very constant, ranging between 30.1 inches and 30.2 inches. Readings with the anemometer showed an air movement due to forced draught and train movement of from one mile to five miles per hour. Some of the tests were made with the Chattaway and Wharton apparatus, and some by the Pettenkofer method. One method was employed to check the other, and the mean average result was 16.62 volumes of carbon dioxide in 10,000 volumes of air. This is an amount much above the bearable average.

It had been assumed that, inasmuch as the cars were in such close connection with the surrounding tubular masonry, that an entire renewal of the air would result from the powers of suction. Apparently this has been a forlorn hope, for all that has been accomplished has been the pushing around in a circle, as it were, of the vitiated atmosphere of the tunnel.

Have the engineers of the subway considered this problem sufficiently; and what of our new tunnels under the North River and to Brooklyn, in all of which the problem is destined to be one of extreme seriousness?

Underground railways, such as these, permit of the accumulation of enormous quantities of confined air that must be removed or regenerated. It is idle to discharge this question with the familiar "diffusion of gases" theory—the dangers are real and are soon to be met.

The necessity for some definite outlining of plans as to what is to be done by the engineers of the various tunnels to obviate these grave dangers is apparent, and competent sanitary engineers as well as the New York Health Department should be taken into consultation.

THE NEW YORK CORONERS.

IN the graveyard scene of Shakespeare's Hamlet, after a particularly specious and unconvincing explanation of the law with regard to suicide and accidental death, which shows that even in Eliza-

bethan times, family influence could be used to advantage in covering up family failings, the second clown asks, "But is this the law?" And the first clown answers, "Aye, marry, is't (that is, it is) crowner's quest law." Crowner is the old word for coroner and Shakespeare's caricature was evidently meant as a bit of deserved satire on that ancient but not respected institution, just three hundred years ago. The office still exists, however, and its abuses, and opportunities for perversion of law instead of diminishing have increased in the more complex civilization of our large cities.

There have been for many years movements inaugurated with the end in view of abolishing the coroner's office by legislative enactment; establishing in their stead a board of medical examiners, who shall furnish accurate and, as far as possible, full information concerning deaths under suspicious circumstances. This system has already been tried for many years in Massachusetts with eminent satisfaction. In some of these advances in legal matters it seems well to remember that, as was said not long ago, Massachusetts, besides being a State of the Union, is much more than this, it is "a special state of mind."

Under the proposed law, the medical examiner shall have nothing to do with the legal side of the case. The present coroner, as a relic of ancient English law, besides being a medical official is a legal officer. It is the legal side of the coroner's office that has been especially liable to be misused and it is because of this union of disparate duties with consequent opportunities for legal abuses that lawyers have been particularly anxious to secure the abolition of the cornor's office, as at present constituted.

Already in one county in New York State, that of Erie, as the result of an especially flagrant violation of law and order, the coroner's office has been abolished and medical examiners appointed. The change has been accomplished to the eminent satisfaction of both the legal and medical profession. There seems no reason to think that the same change could not be accomplished in New York City with the result of doing away with the present complaints as regards the board of coroners and at the same time furnishing opportunities for serious medico-legal research that will prove of great service to American medicine and to the teaching and investigation of the knotty points that are so often involved in medico-legal cases.

At the present time this is a branch of medicine that does not receive its due share of attention here in America. While large European cities, such as Paris, Berlin, and Vienna, have medico-legal institutes that are not only a credit to civilization, but secure valuable material for study and give contributions to the science of legal medicine that are of importance to all the world, New York is almost entirely without any such institutions and most other cities of this country are similarly placed. In Massachusetts, since the abolition of the board of coroners and the establishment of the medical examiners, a series of most valuable medico-legal papers involving original investigation of a high order and noteworthy scientific results have been published. If for no other reason than this, the abolition of the board of coroners would be eminently desirable. Under present conditions it is practically impossible that such investigations and proper teaching opportunities in this subject should be provided.

We are prone to complain of the contradictions of our medico-legal experts on the witness stand in this country. The fact of the matter is that no satisfactory opportunities for the development of genuine medico-legal experts are provided. The pathological material for such opportunities is ample, but our antique laws preclude its proper use. If we wish seriously to develop the science of legal medicine and with it a body of medico-legal experts whose authority shall be real and not imaginary, and whose testimony shall not be a mass of contradictions, then an important step must be the abolition of the board of coroners in New York City.

IS THIS WOLF-WOLF?

FOR years the medical journals have been trying to convince the practitioner of the widespread evil of substitution and adulteration in drugs. But the profession has turned a half credulous, half indifferent ear, as if bored at the familiar sound of "Beware of Substitution," and "None genuine without this mark." They have in some instances hinted that it was necessary for the journals to support their advertisers: and have firmly believed that the adulterations were confined to proprietary medicines put up in labeled bottles and taken at the public's risk.

How many physicians make a practice of going behind the scenes and watching the preparation of a prescription, and how many if they did so would be able to tell by the form in which the crude drugs were handled whether they came originally from reputable sources, or whether they were

bought by the honest but misled druggist, from middlemen who successfully adulterated their wares?

From the laboratories where the exact potency of an absolutely pure drug is determined for endorsement in the U. S. Pharmacopœia, to the druggist's counter where supposably the same potency is being handed out on a physician's carefully written prescription there is often so wide a variation that one wonders whether it would not be safer for us to go back to the days of herbs and simples, and to cull and brew our own remedies.

At last the Health Department of New York has brought to the attention of the medical profession through the daily press, a forcible reminder of the widespread practice of substitution and of the adulteration of drugs. The medical profession has for years been thwarted in the greatest emergencies by the false values of the remedies furnished to their patients in their prescriptions. But the public has treated them with that tolerant, easy-going air of good-natured understanding, as though one should say "It *is* hard to see another man getting one's profits," and has given the warning no more thought than would be bestowed upon a patent medicine vender's earnest plea to "Take no other," and "Beware of substitutions."

Commissioner Lederle has set in operation a wholesale examination of the stuff that is commonly sold as phenacetin. His physicians and staff have purchased phenacetin powders from 373 drug-stores, in Manhattan and Brooklyn. The official report gives the names of all, and includes many well-known drug-stores, and department stores. *Among these samples, only 58 were found to be pure phenacetin, while the greater number, 315, were adulterated.* The chief adulterant was found to be acetanilid, selected undoubtedly because of its cheapness, and its similar effects, in part, to phenacetin.

In the sale of an ordinary ten-grain pure phenacetin powder, the druggist makes a little over 200 per cent. He buys the phenacetin at $1.00 per oz. and retails it in small quantities at $3.20 per oz. If his adulterant be acetanilid it is bought at the rate of 2½ cents an ounce, leaving him his sales almost clear. This mean and petty money traffic need not, however, be laid at the door of the retail druggist alone. It is important to lay the blame, however, where it is due, for the question is one with a double moral issue. The physician does not trouble himself about the druggist's profits or his sense of honor in dollars and cents; but he has his patient's health in his hands, and when he finds, if he ever does learn, that a cheap heart depressant such as acetanilid given in his prescription instead of the drug on whose certain action he is depending, he is justified in his honest indignation.

This is by no means a single instance. Nearly every drug in the Pharmacopœia is adulterated, and as such fails to give the desired action. So great has this evil become that we often confess to one another that we prescribe less and less, and confine ourselves to a few fundamental drugs, remedies which we think we obtain from reliable sources and give in cases of necessity, leaving our patients to take their favorite compounds of tonics and appetizers on their own responsibility.

If drugs could be treated sacredly, exactly, and conscientiously by the druggists, and by the public, as they are in hospitals, in experimental laboratories, and as physicians themselves treat them, the practice of medicine would be a much more satisfactory profession than it is at present.

We trust that in this particular case the New York Board of Health, which does nothing by halves, will trace this scandal to its source, and further, we hope that physicians and druggists will prove as energetic as are the manufacturers of cereals and baking powders in establishing pure food laws, and will bring the enactment about pure drug laws, that will at least serve as a warning to offenders, and a caution and protection to the trusting prescribers and buyers of drugs.

ECHOES AND NEWS.

NEW YORK.

New York Prison.—The New York State Prison Commission, in its annual report, recommends the employment of penitentiary convicts in agricultural work and on highways, and of jail convicts on highways, and protests against legislative exemptions from the provisions of the convict labor law. "If one industry is exempted," the Commission says, "the result is the transfer of the men engaged in the making of that product to some other industry. One class of labor is benefited at the expense of another class, which is unfair to the latter." An enlargement of Sing Sing Prison, to accommodate 500 more prisoners, is suggested.

Drug Substitution and the New York College of Pharmacy.—Whereas, the substitution of one article when another is called for, or of an article of one brand when that of another is ordered, involves an act of deception and an abuse of the confidence of physician or patient, and an act of injustice toward the manufacturer of the article so specified, and Whereas, the general commission of such acts is destructive of those mutual relations of confidence between manufacturer, pharmacist, physician and patient upon which the highest success of medical practice depends, and Whereas, such practices appear to be increasing at the present time,

and threatening serious professional and commercial difficulties, therefore, it is Resolved, that the College of Pharmacy of the City of New York publicly condemns all acts of substitution whether in prescription work or in ordinary trade; that it declares such practices to be violations of just dealing, opposed to the principles of professional ethics and subversive of good morals, and it is further Resolved, that we exert our utmost influence both as individuals and as an institution, to discourage such practices and to promote professional and commercial confidence.

Lectures on the Neuroses and Psychoses of Spirits and Drug Addictions.—Dr. T. D. Crothers, of Hartford, Conn., will deliver a course of lectures on Alcoholism, Morphinism and other Drug manias, in the hall of the New York School of Clinical Medicine, 328 West Forty-second street, between Eighth and Ninth avenues. These lectures will be given on the first Tuesday of every month, at 11 A.M. and 8 P.M. The profession are cordially invited to attend.

Sex Determination.—Prof. Gage, the distinguished embryologist of Cornell University, delivered a lecture on the subject of "Sex Determination and Maternal Impressions," at the Cornell University Medical College Building on Friday, January 23, at 5 o'clock.

Medical Society of the State of New York.—Members of County Medical Societies and the profession of the State generally are invited to attend the Annual Meeting of this Society, which is to be held in Albany, January 27 and 29, 1903. Reduction in railroad fare can be secured by obtaining at the station, on starting, a certificate which, when endorsed at the meeting by the secretary and the Special Agent of the Trunk Line Association (who will be present the first two days), will entitle to return at one-third fare.

Alumni Mt. Sinai Hospital.—The sixth annual reunion and dinner of the Associated Alumni of Mount Sinai Hospital, was held at the Arena, 41 West Thirty-first street, January fifteenth, Dr. Samuel M. Brickner, presiding. Interesting addresses were made by Mr. Isaac Stern, the vice-president of the hospital, Emil Gruening, M.D., F. P. Foster, M.D., Mark Blumenthal, M.D., William F. Fluhrer, M.D., B. Sachs, M.D., Nathan E. Brill, M.D., Percy Friedenberg, M.D., and Walter M. Brickner, M.D. The following officers were elected for the ensuing year: President, Edward Friedenberg, M.D.; Vice-President, George L. Brodhead, M.D.; Secretary, Charles Goodman, M.D., and Treasurer, Eugene H. Eising, M.D.

Obituary.—Dr. Susan R. Pray, one of the conspicuous women physicians of Brooklyn, died last week in her home at 436 Washington avenue. She had been ill since November last. She was born in Brooklyn forty-five years ago, and was a graduate of the Post-Graduate College. After graduation she practised in Brooklyn for three years and then decided to go to China as a missionary for the Woman's Foreign Mission Board of the Methodist Episcopal Church. She was in China two years. Her health failed, and she had to return to Brooklyn.

PHILADELPHIA.

Officers of Pediatric Society.—At the meeting held January 13, the following officers were elected: President, Dr. D. J. Milton Miller; Vice-Presidents, Drs. J. H. Jopson, A A. Eshner and J. H. McKee; Secretary, Dr. C. H. Weber; Treasurer, Dr. H. B. Carpenter; Recorder, Dr. D. L. Edsall.

Polyclinic Celebrates Twentieth Year.—The Twentieth Annual Meeting of the Corporators of the Philadelphia Polyclinic and College for Graduates in Medicine shows that the year has been one of progress in all departments. New properties adjoining the hospital and on the opposite side of the street have been secured and much-needed improvements will be added as soon as funds are secured.

Dr. James Leaves Estate to Charity.—The will of the late Dr. Bushrod W. James bequeathes to the city of Philadelphia a property on Mount Vernon street, all his instruments and office appliances, and $55,000 for the following purposes: The maintenance of "an institution for the examination, treatment and operation of eye, ear, nose, throat, cardiac and pulmonary diseases." His books and an endowment of $40,000 are given for the support of a free library.

Clinical Report of a Case of Tubercular Leprosy.—This report was made by Dr. J. V. Shoemaker at the meeting of the Philadelphia County Medical Society held January 14. The patient was a male Russian, who entered the Medico-Chirurgical Hospital one year ago, presenting a condition that had been diagnosed mycosis fungoides. The man had been in this country eight years and had always apparently had good health. Two years previous to his admission the appearance of pimples on the back of the hands was noticed. Afterward they appeared successively on the face, back, breast and arms. The mucous membrane of the nose and throat was unaffected. On admission, there were closely packed tubercles on the face and scalp. No pus was present in those locations, but from tubercles on the arms some pus escaped. The diagnosis of leprosy was made. Dr. Shoemaker gave the differential diagnosis between mycosis fungoides and leprosy, the principal points being that the former is preceded by erythema and followed later by itching, especially in the eczematous form. There is edematous infiltration in mycosis and the formation of tumors. Anesthesia is not present as in leprosy. Microscopic examination of the tissues will settle the diagnosis with great readiness.

The Lepra Bacillus in the Circulating Blood.—Dr. L. Napoleon Boston, who examined the blood of Dr. Shoemaker's case, reported the findings of the examination. Blood was taken from one of the patient's fingers at a point where the skin was apparently healthy. The flow of blood was quite profuse. The erythrocytes were pale and took the stain but slightly. Macrocytes and microcytes were present, the former predominating. Forty nucleated red cells were seen while counting two hundred leukocytes, thirty being normoblasts and ten megaloblasts. Differential count of the leukocytes showed 60 per cent. of polymorphonuclears and nearly nine per cent. of eosinophiles. Lepra bacilli were found in the blood, both in the plasma and in the leukocytes. Two was the smallest number and eight the largest in any of the leukocytes contained bacilli in large numbers.

Leprosy Not Dangerous in This Country.—In discussing the papers Dr. H. W. Stelwagon said that he doubted the existence of the long incubation period assigned to leprosy by some writers. He believes that it is not more than a very few years at the most. The eruption may be present and not noticed for some time. The method of invasion is obscure. Many claim that the disease is hereditary, but the discovery of the bacillus lepra suggests the possibility of contagion. However, we should not regard with fear a case of leprosy in our midst. Lepers are treated in the general hospitals of Vienna and Paris without spreading the disease, and there is no reason why they should not be so treated here. From the few cases that have been in Philadelphia no contagion resulted, though one of them was an assistant clerk in a large hotel for more than a year. If contagious, as generally believed, each case

should have given rise to ten or even one hundred more. Tissue weakness is the only hereditary legacy concerned in propagating this disease. Dietetic, climatic, and hygienic conditions are the active causes in the spread of leprosy. The disease is gradually disappearing where the people are not segregated. There is no reason for secluding lepers as is done here, it being exceedingly doubtful if the disease can be transmitted under the conditions of living as now observed. The speaker characterized the method used in dealing with lepers in Philadelphia as being inhumane and stated that he would not notify the authorities if he saw a case. He would have the man leave the city and go where he could be properly looked after.

Leprosy in a Native of Philadelphia.—Dr. Jay F. Schamberg said that most of the small number of cases that had been treated at the Municipal Hospital were Chinese but various nationalities were represented. The last patient that was admitted was a native woman of Philadelphia who had never been outside the city. The contagion must evidently have been brought to her in some manner. The disease, however caused, is one in which the contagion is transmitted with a great deal of difficulty. If we recognize the so-called lepra bacillus as the cause of leprosy we must also accept the view that it is contagious. It probably requires long contact and some peculiarity of the individual to induce transmission. This can hardly occur in temperate climates. Arguments against the theory that fish bear the contagion are the facts that the lepra bacillus has never been found in them and that leprosy occurs in people who have never tasted fish.

CHICAGO.

Election of Dr. Billings.—Dr. Frank Billings has been elected president of the Cook County Hospital staff, and Dr. L. Blake Baldwin secretary.

Election of Dr. Webster.—Dr. George W. Webster, at a recent meeting of the State Board of Health, was elected as president.

Visiting Nurses' Antituberculosis Crusade.—A communication from the Visiting Nurses' Association was read at the last meeting of the Society in which was asked the endorsement of their effort to limit the spread of consumption, and the following motion was carried: That the Chicago Medical Society cordially endorse the antituberculosis crusade on the part of the Visiting Nurses' Association, and that we offer the Visiting Nurses' Association every help, individually and collectively, that shall have for its object the suppression of tuberculosis.

A Case of Spina Bifida Without a Sac.—Dr. A. R. Small read a paper on this subject and reported a case. At 8 P.M., Dec. 29, 1901, he was called to attend Mrs. G. L., aged 20, a primipara, in the first stage of labor. The cervix was just beginning to dilate; and the first stage of labor was not completed until afternoon of Dec. 30. The position was L.O.A., the pelvis normal, but the pains were weak and inefficient. Toward midnight, as the natural pains seemed entirely inefficient to accomplish delivery, he applied the forceps. There was no rupture of the perineum, but a slight tear simply through the mucous membrane at the entrance to the vagina on the left side, which was immediately repaired and healed by primary union. The mother recovered without a particle of fever. On examining the child, he found the following conditions: At the point at which spina bifida is usually found, *i.e.*, at the junction of the lumbar vertebra and sacrum, there was entire absence of membrane of any kind over the cauda equina for the space of one inch. The skin was wanting over a space two and a half inches in diameter, and from the edge of the skin there was a gradual slope to the cauda equina, which could plainly be seen for the space of one inch. As there was no membrane whatever present to cover the cord, he decided to trust to nature to throw up granulations over the cord as the best measure of repair, fearing, however, that before nature could repair the defect the spinal canal would become infected, or the drainage of the spinal fluid would prove fatal. He placed a large pad of absorbent cotton over the parts, secured by a bandage. The drain of spinal fluid was extensive. He had no way of estimating the exact amount, but the dressings were saturated several times a day. He thinks there must have been several ounces of fluid lost daily. Granulations filled in rapidly, and the cord, or cauda equina, was entirely covered by granulations at the end of a week, and the spinal fluid had ceased to flow. There were no convulsions, nor other nervous symptoms. During the first week, while the spinal fluid was flowing out so copiously, the babe passed very little urine, but as soon as the flow of spinal fluid was shut off by granulations, the flow of urine became free. Healing continued, and at the end of a month the opening was entirely filled up with granulations and covered with skin. He called May 12, 1902, to see the child, and found that hydrocephalus had developed. The mother told him that the child had not been ill at any time except having had a slight cold. Hydrocephalus in this case was probably due to shutting off the flow of spinal fluid after it had been formed so abundantly. It seemed remarkable to him that the child could lose so much spinal fluid for several days, one week, without any symptoms of disturbance. Probably it had become accustomed to such loss in utero. When the membranes ruptured during labor, the contents of the amniotic sac had a milky appearance, probably due to the admixture of spinal fluid. The author had searched the literature at his command, but failed to find a parallel case. Cases of spina bifida are not infrequent, but cases of entire absence of any kind of membrane over the cord, he believes, are rare.

Treatment of Progressive Deafness Based on Differential Diagnosis.—The author of this paper, Dr. J. Holinger, stated that in treating cases of progressive deafness otologists obtained excellent results in some cases, while in others, apparently identical so far as the conditions were concerned, the results are disappointing, both to the otologist and patient. Formerly, the result of the treatment, rather than the examination, revealed the diagnosis. "Treat the patient for two weeks, and you will see whether or not he can be cured" is the advice given by text-books. He said the consequence of this empirical and unscientific method was mistrust of the profession against the men who represented this specialty, the prejudice of the public amounting to complete nihilism, which was expressed in these words, "Nothing can be done for the ears," and consequently the patient was tossed like a ball from one doctor to another without getting a definite answer to the question, "Will I hear again?" He believes that either yes or no is the answer that can be given in over 95 per cent. of the cases after the first examination. Before reporting cases, he gave a short sketch of the development of our knowledge in this direction. The knowledge that several pathological conditions can produce the clinical picture of progressive deafness is old, and a number of names were supplied, such as dry catarrh, hypertrophic catarrh of the ear, catarrhal deafness, etc., which had little meaning for the pathologist. Anchylosis of the stirrup in the oval window was a pathological condition known to be a cause of deafness. However, no knowledge of the symptoms existed, and

hence no diagnosis *in vivo* was possible until Bezold, in 1885, first showed that in a patient, who, during his life, suffered from progressive deafness with only one pronounced symptom, namely, a constantly negative Rinne test; there were extensive changes of the bone surrounding the labyrinth which led to anchylosis of the stirrup. During the following ten or fifteen years large numbers of examinations were made by Bezold, Politzer and Siebermann, which led, on the one hand, to the establishment of a characteristic group of symptoms, together with what is known as Bezold's tripod of symptoms, and, on the other hand, to the recognition of a pathological process in the temporal bone described as spongifying, which takes place in the bony capsule of the labyrinth, most often in the neighborhood of the oval window, and which in some cases leads to anchylosis of the stirrup in the oval window. The symptomatology and pathology becoming more and more known, a scientific basis was created, and a large number of cases of deafness were defined and differentiated from the rest. These were the cases that from the start proved intractable to any treatment, and many of the cases after years of treatment were worse than those that were of equally long standing, but had never been treated. The influence of long treatment is shown in the following case: Mr. E. A. V., forty-five years old, dentist in Salt Lake City, was referred to the author by Professor Senn, Dec. 11, 1900. He could not hear loud shouting in either ear. In 1894 he noticed, first, that he became deaf, but his wife states that the trouble dated farther back. For five or six years he was faithfully treated in Salt Lake City, with massage, inflation of the Eustachian tubes, cauterization, and trephining of the nose, etc. His ears never discharged or pained him. Both drumheads were normal, and air entered freely through the Eustachian tubes into both middle ears. The only remnant of hearing which was left was a small insula from e_1 to a_2 by air conduction, and á for a short time by bone conduction. Patient is certain that the treatment impaired his hearing. The author's directions, therefore, in all similar cases have been to keep away from treatment. A similar case was reported. The other group of cases mentioned by the author are those of affection of the Eustachian tube, which often gives excellent results and always has a more favorable prognosis. The Benzold tripod is absent. Here the diagnosis often calls for persistence in treatment, and demands patience where success is slow. Cases falling under this head were reported. In closing, the author desired to leave the impression that otologists need not depend upon haphazard methods, but he believes they can make a final diagnosis and prognosis after the first or second examination in these cases of progressive deafness. The advice of textbooks for trial treatment of two weeks is frequently not enough, but often it does harm.

In Memoriam.—A committee of the Chicago Medical Society, consisting of Dr. Joseph A. Capps, M. L. Harris and Robert Zeit, appointed to draft suitable resolutions on the death of Major Walter Reed, made the following report: In the death of Major Walter Reed, U. S. A., the medical profession has lost one of its most distinguished members. Dr. Reed was graduated from the medical department of the University of Virginia in 1869, and from the Bellevue Hospital in 1872. In 1875 he became assistant surgeon in the United States Army. A determining period of his life began when he undertook the special study of bacteriology and pathology under the stimulating influence of Dr. Welch at Johns Hopkins University. His contributions on experimental subjects and later his conduct of the Army Medical Museum bore the stamp of exceptional ability. When he undertook the investigation of yellow fever and its cause every step of the procedure marked the workings of a trained mind combined with a tireless energy and undaunted courage. Without hesitation he carried through a series of experiments which endangered his own life and that of other volunteers to prove that a mosquito is responsible for conveying contagion of yellow fever. As a result of his suggestions preventive measures were instituted in Cuba which have already robbed the scourge of its terrors.

RESOLVED, That the Chicago Medical Society record an expression of its regret in the untimely death of Dr. Reed, and be it

RESOLVED, That the above be entered in the minutes of the Society and a copy of the same be forwarded to his widow. The resolutions were adopted.

CANADA.

Undesirable Immigrants.—Dr. W. L. Ellis, the newly appointed quarantine inspector at the port of St. John, last week ordered the deportation of sixty immigrants, most of them being affiicted with trachoma.

Personal.—Dr. L. W. Cook, Truro, Nova Scotia, has gone to Newfoundland where he will take charge of the practice of Dr. Herbert Smith of Buren, while the latter is taking a post-graduate course abroad.

Montreal General Hospital.—The Endowment Fund of the Montreal General Hospital still keeps growing. A $5,000 donation has lately been received from a woman friend of the institution.

McGill's New Gymnasium.—Lord Strathcona has promised to give $20,000 for the erection of a new gymnasium for McGill University. The students had already contributed among themselves $1,000. The graduates will also be approached; and it is proposed to make the gymnasium a memorial of the Seventy-fifth Anniversary of McGill.

St. Francis District Medical Association.—The regular meeting of the St. Francis District Medical Association of the Eastern Townships of the Province of Quebec, was held on Jan. 14. Dr. Stevenson, Inspector of Public Buildings, proposed that a memorial be presented to the Provincial Government regarding the curriculum of the Protestant public schools of the province, holding that this should de revised and that a number of subjects struck off. He also drew attention to the very bad system of ventilation in the public schools of Quebec.

Vaccination in New Brunswick.—At the last session of the legislature of the Province of New Brunswick an Act was passed providing that all children before being admitted to the public schools of the Province, should produce to the satisfaction of the teacher, certificates of successful vaccination within three years preceding such application for admission. Several of the boards of health sent out notices that a physician's certificate must be produced, but the Attorney-General has ruled that this is not necessary, but that a certificate of the parent or guardian, verified by a solemn declaration, will be sufficient compliance with the Act. As parents in many country districts in that province have been in the habit of procuring vaccine points and doing the operation on their own children themselves, the decision of the Attorney-General is considered to be an important one.

The Proposed Children's Hospital for Montreal.—Last week the Organization Committee in connection with the proposed memorial hospital for children to the late Queen Victoria, held a meeting and decided that the new hospital should act as an adjunct to the general hospitals of Montreal. It is hoped to secure a site on the side of Mount Royal; and as many of these cases

are tuberculous bone affections, the situation is considered to be a desirable one. Dr. A. McKenzie Forbes is the secretary of the Organization Committee.

Obituaries.—Dr. Henry W. Day, Belleville, Ont., who for the past twelve years has been registrar of the county of Hastings, died on Jan. 10. He was seventy-two years of age and formerly practised his profession at Trenton, Ont.

Dr. W. S. McKay, physician in charge of the hospital at the Superior Lumber Company's camp, Port Arthur, Ont., died on Jan. 10.

Dr. A. S. Fraser, Sarnia, Ont., one of the best known physicians in Western Ontario died on Dec. 31, of Bright's disease, at the age of fifty-six years. Dr. Fraser was a graduate of Queen's University, Kingston, and for several years was examiner in physiology for the Ontario Medical Council. He was largely instrumental in the establishment of the Sarnia General Hospital in 1896 and since that time had been president of the Hospital Board up to last November when he resigned on account of ill health.

GENERAL.

International Medical Congress in Madrid.—The central committee of Europe having in charge the interests of the International Congress of Medicine, to be held in Madrid, April 23 to 30, has named the Voyages Pratiques of Paris as the official agency to make all arrangements for the transportation and lodging of those attending the Congress, to furnish membership tickets, and to organize and conduct a series of tours through Spain. The Voyages Pratiques is authorized to make the bookings for express trains, sleeping cars, hotels, and private lodgings. The regular trains being few in number and always overcrowded, it has arranged for a number of special trains, but since places in these will be filled early, those who expect to attend the Congress should make their applications as soon as possible, to insure accommodations. This is especially advised, owing to the extreme difficulties of travel in Spain, and the overcrowding and irregularities which may occur unless proper precautions are taken. The Voyages Pratiques are enabled to offer members the advantage of 50 per cent. reduction on the railways, for round trip tickets. In order to facilitate the arrangements of the American physicians and scientists who expect to attend the Congress, and to centralize the correspondence in this country, the Voyages Pratiques has appointed the tourist firm, Dr. and Mrs. Howard S. Paine, of Glens Falls, N. Y., as its American representative, with full authority to act for it in all the capacities enumerated above. Address all inquiries for information to Dr. and Mrs. Howard S. Paine, 148 Ridge street., Glens Falls, N. Y.

Health Officers Reelected.—The State Board of Health of Maryland held its annual meeting last week. Dr. William H. Welch was reelected president, and Dr. James Bosley, Dr. Howard Bratten and Mr. J. D. Noel Wyatt were chosen to serve as members of the executive committee. Dr. W. R. Stokes was reelected bacteriologist and Caleb W. Rohrer as assistant; W. D. B. Penniman as chemist and Charles W. Mitten as inspector.

Dr. Fulton and Dr. William H. Welch, who have been appointed delegates from the State Board of Health, went to Washington Monday to attend the plague conference which convened in that city on Jan. 19.

A Pension That Should Be Granted.—Major Walter Reed, Surgeon, United States Army, died recently and left his family very ill provided for. Unfortunately, his physical condition had deteriorated after he entered the army so that he was unable to obtain any life insurance. The debt that this country owes to Dr. Reed can scarcely be estimated in money, for it means the saving of untold annoyance to many of the people of the United States, of millions of dollars to our merchants, and of an enormous number of human lives in the future. To him more than to any one else is due the discovery of the cause and the means of prevention of yellow fever. For the first time in 170 years Cuba is free from yellow fever and no longer a menace to the health and commerce of all our Southern cities as well as of our Northern cities, which yellow fever has visited on more than one occasion with very serious loss, both of business and of life.

During the Civil War the greatest indignation was excited in the North by the alleged attempt to introduce yellow fever through the clothing of persons dead of the disease. We know now that persons who have never had yellow fever can wear such clothing with perfect safety and that the disease is spread not through clothing, but by mosquitoes. All the annoyance of quarantine, disinfection of person and clothing and ships hereafter will be entirely unnecessary, provided the proper precautions are taken to prevent the spread of the disease by the mosquito. If ever any man's family deserved a pension from his country for the most valuable services rendered, Dr. Reed's deserves one. We hope that Congress will see fit to give his wife and children the very modest sum of $4,000 a year, which a bill now pending asks for. No money can ever pay for such services as Dr. Reed's; but we can at least prove that we are a grateful country by ministering to the comfort of his family.—*New York Sun.*

Dr. John Connell of Jersey City has been appointed medical inspector of the Hudson County Board of Health, to succeed Dr. Charles C. Hendrik. Dr. Connell will resign as a member of the board to accept the place, which pays $1,500 a year.

Obituary: Dr. R. H. Goldsmith.—Dr. Robert H. Goldsmith, died suddenly last Tuesday night of heart failure. Dr. Goldsmith had been practising medicine for over half a century and was one of the best-known physicians of Baltimore. He was a man of extended cultivation and broad sympathies, was actively identified with a number of charitable associations and for many years had given his professional services freely to several institutions. Though he had a large practice, he found time for many private charities, and only those to whom he has given assistance were aware of the extent of his benefactions. Dr. Goldsmith was descended from an old Maryland family, the founder of which, Charles E. Goldsmith, came to this country from England in 1732 and settled in Maryland; and since that time, with the exception of a period of about ten years, some representative of the family has lived in the State. Dr. Goldsmith was the son of John and Eliza Goldsmith and was born in this city February 26, 1832. His collegiate education was received at Loyola and St. Mary's College, on North Paca street, now the seminary of St. Sulpice, where some of his classmates were Bishops Thomas and John Foley and the late Joseph Heuisler, well known as a lawyer. After completing his college course he studied medicine at the University of Maryland, taking his degree there in March, 1852. Though he was still under age, he was appointed coroner, and in this capacity in the following summer was called on for active service after the terrible railroad accident of July 4, near the Relay on the Baltimore and Ohio.

Dr. Frederick J. Bancroft, of Denver, died in San Diego, Cal., from heart disease last week. He was born in Connecticut in 1834, and wrote extensively on the effects of climate upon certain diseases.

CORRESPONDENCE.

TRANSACTIONS OF FOREIGN SOCIETIES.

French.

TREATMENT OF APPENDICITIS—VAGINAL PROCIDENCE—LIGATURE OF THE INFERIOR CAVA—TREATMENT OF NEURALGIA BY INJECTION OF ATMOSPHERIC AIR.

LUCAS-CHAMPIONIERRE, at the Society of Surgery, Dec. 17, 1902, presented a contribution on the subject of the treatment of appendicitis. He said that he was amazed at the extreme divergency of opinion existing among surgeons and practitioners upon this matter. There are, in the first place, two general schools of treatment, namely, operators during the attack and operators after the attack. In some instances they are so distinctly separated that the one will not operate during the interval and the other will not operate during the attack. For his own part, he is also impressed by the frequency of mistakes in diagnosis which lead to operations upon patients who are not at all the victims of an appendicitis. As a matter of fact, however, more recently diagnosis has been made more accurate and the number of errors has been very materially decreased. On the other hand, he has been convinced by authorities like Dieulafoy of the frequent impossibility of prophesying the ultimate outcome of an appendicitis, and he has also been convinced of the necessity of operating, notwithstanding the risk of committing an error in diagnosis, in order to save from death patients whom only a precocious intervention may save. In a series of 44 cases on whom he has operated during the stage of suppuration, he has lost 12, of whom 11 were absolutely beyond hope. Of the 32 cases who recovered, several were in such bad condition that they would certainly have died without operation. In another series of 85 cases on whom he had operated during the interval, or during the subacute initiatory stage, he had 85 recoveries. So far as the dangers of purgation are concerned, on which so much has been insisted, he said that the consensus of opinion and that his own concurred with a large number of American surgeons, who do not believe absolutely in the dangers of purgatives during appendicitis. On the other hand, he is entirely convinced of the dangers of opium, and this is contrary to the statements of Kirmission. The most severe cases he has seen are those which, at the outset, took opium and had ice applied to the abdomen. In fact, in a certain number of these cases he feels that the opium itself was responsible for the degree of appendicitis, for he has operated on people who probably, at the outset, had very little inflammation, which increased under the influence of the drug. The difficulty with the drug is, that at best it masks the symptoms and permits the progress of the disease directly under the eye of the surgeon, and notwithstanding his presence. So far as leaving the appendix in, in case of abscess with pus suppuration is concerned, he feels that it is not followed by such fatal results as was once supposed. In his own experience, he does not recall one case where a permanent fistula followed this treatment.

RICHELOT said that in a recent communication in which Delbet had described a new procedure for perinorrhaphy, confusion had arisen between the actual appearances of the perineum and a procidence of the vagina. These two conditions should be distinguished, one from the other, because many women have a severe prolapse of the vagina without any tears in the perineum. This difference has great importance from the standpoint of treatment. A simple tear of the perineum is usually cured by a simple operation, while procidence, on the opposite wall of the vagina, necessitates a complex operation, namely, the repair both of the perineum and the vaginal wall. So far as the technic of the operation is concerned, he considers Delbet's method to be concerned chiefly with establishing a muscular plane by suture of the levatores muscles. It did not necessarily concern retraction of the vagina by the incision of a large amount of tissue from it. So far as the necessity of using gold wire is concerned in this region of the body, he is not convinced that it is required for the reason that catgut itself holds so well, and for so long a time that it does not give way before the wound is strong enough to stand itself.

DELBET said that the Society had requested him to present a report of two observations of calculus pyelonephritis, which were addressed to him by Herosso of Bucharest. In both of these patients, the operator, in order to appreciate the value of the kidneys supposed to be healthy, performed prolonged catheterism. He preferred this method to that of separation of the urine, which did not permit of collecting the urine for 24 hours consecutively. Ureteral catheterism, applied only to the diseased side, brings about a danger of infection on the opposite side. According to this method it is possible to collect separately the urine from both kidneys. During the course of a nephrectomy in one of these individuals, this operator tore the inferior vena cava, and endeavored to suture up the tear, after passing a temporary ligature above and below the tear. This ligature of the vein was not followed by any disturbance of the circulation, contrary to what might be supposed.

MARIE, at the Medical Society of the Hospitals, on Dec. 12, 1902, read a paper on the treatment of neuralgia by the injection of atmospheric air, in the name of Crouzon and himself. The results which he obtained in a certain number of cases of neuralgia by means of subcutaneous injections of atmospheric air were given. This method was introduced by Cordior of Lyons, and consists of injecting at the painful point a quantity of filtered air, from a liter to one-half liter. In a number of cases of sciatica, in one case of zona, and in one tabetic who suffered with an area of hyperesthesia, the disappearance of the pain was almost immediate. This observer believes that the good effects of these injections are due to a kind of elongation of the nervous extremities through the presence of the gas, making it comparable to the stretching of the sciatic nerve itself for sciatica.

SOCIETY PROCEEDINGS.

JOHNS HOPKINS MEDICAL SOCIETY.

Regular Meeting, December, 1902.

The President, Dr. William Osler, in the Chair.

Certain Forms of Cyanosis with Polycythemia.—Dr. Osler said cyanosis is a common symptom. It is seen (1) in a large group of heart cases: (*a*) Congenital heart disease, (*b*) acquired heart disease, especially in mitral cases. In this form the cyanosis may be long continued; one case in this hospital had cyanosis over the entire body over three years. (2) In pulmonary diseases. Here cyanosis is comparatively rare. Sometimes seen in tuberculosis but most marked in emphysema. Only in emphysema and congenital heart disease will a patient be able to walk into the doctor's office and frighten him by the intense cyanosis of his face. (3) In Raynaud's disease. Here it is due to vasomotor disturbances and is localized in the hands and feet. (4) In rare cases of scleroderma, or in certain cases with obscure etiology. In one case of abscess of liver seen here, there was marked cyanosis for

weeks, of such a degree that the impression of the hand remained upon the body for several minutes.

Two recent cases which have come under his observation, belong to this last group. The first is that of a male who has been admitted to this hospital four times, giving the same history on each occasion. He complains of persistent nausea, and vomiting and constipation. He presents a remarkable degree of cyanosis of the lips, chest and hands. The condition of the blood is striking. On May 20 the blood count was 10,200,000 red corpuscles, hemoglobin 115, no especial change in the leucocytes. The lungs, heart and kidneys are normal. The blood pressure is 142.

The second case is that of a male whose appearance is most striking, especially on a cold day. His face is livid and his ears indigo-blue. The hands are constantly cyanosed. His blood count also shows 10,000,000 red corpuscles. His heart and lungs are negative. There is a trace of albumin and a few casts in the urine. His general condition is good, and he is only short of breath on misty or cold days.

Nothing is known as to the etiology of this type of cases. Cabot has reported two, and Saundby, of London, has likewise seen two cases. The high blood count is of interest. It sometimes occurs in stomach diseases, where there is much nausea and vomiting. In the second case described there are no gastric symptoms whatever, and in the first case the cyanosis persists even when the stomach is at rest.

An Interesting Case of Paraplegia with Recklinghausen's Disease.—Dr. Thomas said that he reported this case at Dr. Osler's request on account of the nervous manifestations. The patient is a female, fifty-one years old, who has always lived on a farm in West Virginia. No similar condition has occurred in any other member of the family. The past history is unimportant. The patient has always noted certain tumors on her body; one on the back of her right ear she remembered as a child. She also remembers to have seen pigment-spots on her skin. Five or six years ago these became so numerous that she showed them to a doctor. The last tumors to appear were on the face. Her present illness began five years ago, with a stinging pain in one ankle, making her think that her clothes were on fire. The pain occurred at short intervals, gradually extended up the leg, involving the lower back, then went down into the other leg. Two years ago she commenced to have similar pains in the arms and at the same time began to drag one foot. Gradually it became hard for her to get about and for the past year she has been confined to bed or to a reclining chair. During the last three months she has been unable to move herself and her arms have become so weak that she cannot arrange her hair or knit. From the first there has been jerking in the muscles and at times, ringing in the ears. Six months ago dysphagia came on and her voice became thick and nasal. There were no bladder symptoms at first, but for the past month she has been catheterized daily. The patient complains ot pains and stiffness in the body.

On examination the entire body and extremities are found covered with a great number of tumors, varying in size from the smallest papule to that of a large cherry. There are also many pigmented areas and certain bluish spots, which seem to indicate that new tumors are to be formed at their site.

On consulting the monograph of Alexis Thompson on "Neuro-fibromata," it is seen that this case belongs in the group of false neuromata, among the diffuse overgrowths and is to be regarded as belonging to the variety "Cutaneous Neurofibromata (Molluscum fibrosum)." Associated with the cutaneous growths are certain subjective sensory symptoms. The cranial nerves are negative until we reach the tongue, where fibrillary tremors are seen. The muscles of the shoulder girdle are affected as well as those of the arm, and there is evidently a condition of muscular atrophy in the upper extremities. The legs are paralyzed up to and including the hip, except that the patient can move the toes of the right foot, and can abduct the great toe of the left foot. The ankles are flaccid. There is great atrophy of the legs. The deep reflexes of the arms are retained, while those of the legs are lost. Electrical reactions are good except in the hand; in the legs there is only a slight response in the muscles which are still active. Sensation is unimpaired except over the tumors. The eyes are uninvolved. We have then a symptom complex including muscular atrophy, loss of certain deep reflexes, subjective sensory disturbances, with a retention of objective sensory activity.

The literature on the subject has been well summed up by Adrian, in *Beiträge zur klin. Chirurgie*, 1901, p. 1. He says that the nervous symptoms accompanying neuro-fibromata are of many kinds but that they are all comparatively rare, subjective symptoms occurring most frequently. Paralyses are rare. The process may be due to a neuroma situated outside the dura and pressing on the cord, producing symptoms of paralysis similar to those in Pott's disease. In the last number of *Archiv für Psychiatrie* there is a description of neurofibromatosis of the central nervous system.

No case has been reported exactly corresponding to the one here presented. Neuromata are usually situated on sensory nerves but rarely choose them alone. It is very rare to have motor nerves affected alone. In one case reported there was gliomatosis of the cord associated with neuro-fibromata. One possibility is that the blood-vessels have been affected and that the pressure on them has cut off the nutrition of the cells in the anterior horn, thus causing great atrophy in the latter. Every nerve from the cord may be involved. In this case the lesion seems to be extending upward.

Dr. Osler said that the failure of mental strength is a characteristic which is seen in this as well as in two previous cases.

Rectal Surgery.—Dr. Ball exhibited with a stereopticon sixty pictures, chosen from the series of three hundred with which his father had illustrated his Lane lectures at San Francisco. The cases had been photographed with stereoscopic lenses and from the photographs thus made drawings were made by artists to preserve the stereoscopic effect. The slides used in this lecture were photographs from these drawings. The illustrations covered the anatomy and pathology of the rectum, as well as several of the operative procedures used by Mr. Ball.

The Clinical Value of Blood-Pressure Observations in Regulating Stimulation in Sick Children.—Dr. Henry Cook said that hitherto, variations in blood-pressure have been indicated by the expressions "rather better" or "distinctly worse." Especially in pediatrics such expressions give little idea as to the state of the arterial pressure. The principle now advocated is the determination of this pressure by accurate instruments. The instrument is a modification of Dr. Cushing's instrument, which is in turn adapted from the instrument used at Riva Rocci's clinic. A continuous column of air passes from the bulb through a tube into the band which surrounds the arm or leg of the patient and connects with a mercury manometer. The finger is kept on the radial pulse distal to the band, the bulb is compressed and the point is determined at which the pulse just disappears. After a little practice, the error is not more than 3 mm. of mercury in children, and 10 to 15 in adults.

The observations were made at The Thomas Wilson

Sanatorium during the past summer, all determinations being recorded on graphic charts. The cases included marasmus, rickets, pneumonia and diarrhea. The normal blood pressure varies within certain limits, but in general averages about: During the first month, 50 mm.; from two to six months, 75 mm.; from six to 18 months, 75 to 95 mm.

During the third year up to 105 mm. and not over 115 mm. at any period of childhood. After a meal of five to eight ounces of milk a physiological rise of 10 to 15 mm. has often been observed. Excitement also causes a rise in pressure but in children who need stimulants such factors have little influence. It was noticed that the lowest pressure during 24 hours was between 3 and 4 A.M., confirming the generally accepted idea that this is the period of least resistance.

The object of the blood-pressure determination was to learn whether the child was getting too much stimulation or not enough. The main stimulants were whisky, strychnine (gr. $^1/_{100}$ to $^1/_{200}$) and digitalin, the latter two being given hypodermically. Response to stimulation by strychnine was indicated by a rise of 10 to 20 mm. in twenty minutes; this period being prolonged in bad cases. Digitalin caused a higher rise, often 40 mm., beginning in ten minutes and lasting sometimes three hours. Five to ten drops of whisky repeated frequently gave a steady rise in pressure and apparently had some food value as well. Strychnine and digitalin were reserved until after whisky had been tried and only so much of them used as was absolutely necessary, digitalin being tried first and followed by strychnine. Where both were needed the outlook was generally bad. In certain cases in high pressure digitalin was used and found to steady the pulse without raising the blood pressure further. Salt infusion had no effect, being surpassed in several respects by hot mustard baths.

By keeping a graphic chart the doctor was able to retire at night with a considerable feeling of security. The night nurse took the reading and gave or withheld the stimulant according to the condition of the blood pressure, and called the physician only when there was some marked indication. The morning visit of the physician and the orders for stimulation then given became much more intelligent by thus being able to consult the graphic chart. His instrument is being made by Eimer & Amend, of New York.

Some Observations on Blood-Pressure in Morbid Conditions of Adults.—Dr. Briggs said that low blood-pressure is to be seen in toxic conditions, such as typhoid, in hemorrhagic conditions and in traumatic cases. He had tried to determine the effect of stimulation and to record the result by observation, in the third type of cases. To illustrate how useful such a determination may be, in an obscure case, the case may be cited of a woman who was brought in comatose; her arteries were sclerotic, reflexes were absent, and urine was of a low specific gravity and contained albumin. Venesection was done because the blood-pressure was found to be over 350 mm. of the mercury. This lowered the pressure temporarily. At the autopsy cerebral hemorrhage was found.

(1) Alcohol. This is the most variable of the stimulants in its effect on the blood-pressure. A half or one ounce of whisky during typhoid fever will raise the blood-pressure for not more than half an hour. In a few cases alcohol gave a temporary fall of pressure. On the whole the observations seem to show that the temporary rise of pressure due to the administration of alcohol, may be due to a gastric reflex and not to any real effect on the circulation. In order to test this a typhoid patient was given tincture of capsicum and a temporary rise of pressure was observed exactly similar to that produced later in the day by an ordinary dose of whisky.

(2) Strychnine causes much more lasting effects, in doses of one-sixtieth to one-tenth of a grain. The rise in pressure is not so rapid but is more lasting and the general condition improves at the same time. When a great deal of strychnine is being given as a routine, the individual doses have little effect but this may be produced again by omitting several doses. Frequently in traumatic cases, up to one-twentieth or one-tenth grain may be given. The rise of pressure thus produced may be kept up later by smaller doses. This method is far better than to give strychnine as a routine throughout condition of low pressure. No effect was observed with strychnine (*a*) when the patient was moribund, *i.e.*, when the circulatory apparatus was breaking down; (*b*) in cases not needing stimulation; (*c*) when given as a routine, the individual doses merely maintaining the pressure.

(3) Digitalin stands midway between alcohol and strychnine. It produces a result more rapidly but its effect lasts for a shorter time. Many cases however will respond to digitalin that will not respond to strychnine. The combination is very often most effective. The only limit of the dose is that quantity which will give the best effect, and this is judged by the graphic pressure chart. It is not advised that one-fourth grain be given if one-twentieth fails, but to begin with a sufficient large dose to produce a real effect.

(4) Saline infusions have but little effect upon the pressure whether absorption be rapid or slow. An infusion given so slowly as to produce no peripheral stimulation due to the temperature of the fluid, causes no rise. If there be a hemorrhage the infusion helps to replace the fluid not to raise the pressure. The infusion produces no rise in cases of toxemia. In traumatic cases the peripheral irritation may even depress the circulation. Blood pressure is only one factor in determining the condition of a patient but it is a measurable one.

Dr. Crile said that granted that shock is exhaustion of the vasomotor center in the medulla, if both vagi and accelerans are cut and strychnine then given, there is a great rise in blood pressure but it may later fall to a lower level, and the animal into a worse condition of shock than before. The internal stimulation of the vasomotor center by strychnine and its external stimulation to trauma or operation are alike. This means that in extreme cases of pure shock we are really, by giving strychnine, causing a greater shock and weakening at the expense of the potential energy of the vasomotor center. In conditions of deepest shock I have seen no good following the use of strychnine. In such cases peripheral stimulation by adrenalin will alone raise the pressure. In one case a dog whose pressure had fallen to 30 mm. was revived with adrenalin and in another case by the use of adrenalin a headless dog was kept alive for ten hours.

(N. B.—The remarks of Dr. Briggs and those of Dr. Crile can be more readily reconciled when one remembers that the observations of the former refer to the maximum or systolic arterial pressure and took no account of the minimum or diastolic pressure. Dr. Crile's observations on the other hand, refer to the mean blood pressure.)

Dr. Cushing said that on the surgical side there has been a long-felt need of a definite knowledge of the blood pressure. Even Dr. Cook's apparatus leaves much to be desired, for physiologists have shown that this form of instrument is not entirely accurate. At Riva Rocci's clinic, blood pressure observations are made at the same time as those of the temperature and pulse. What is needed is a knowledge, not of the pressure at any one time, but of the variations in pressure.

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting held at the New York Academy of Medicine, December 8, 1902.

The President, Andrew H. Smith, M.D., in the Chair.

The Significance of Variations in the Internal Secretions.—The paper of the evening, on this subject, was read by Dr. Oliver T. Osborne, Professor of Materia Medica and Therapeutics in Yale University. It will appear in full in a subsequent issue of the MEDICAL NEWS.

Graves' Disease.—Dr. Wm. H. Thomson said that as the subject of the evening was such an extended one, he would take up only one of the well-known affections apparently connected with a ductless gland, namely, Graves' disease. His own impression was that this disease is not due to disordered secretion of the thyroid. This gland, he believed, was involved only secondarily, as the spleen was in ague. As to the diagnosis between ordinary or parenchymatous goiter, and exophthalmic goiter, while both diseases begin with enlargement of the thyroid gland, they have nothing else in common. Anatomically, at least as far as we are able to recognize, the two do not differ, but clinically they are absolutely distinct. He enumerated 24 characteristics of Graves' disease, none of which are met with in parenchymatous goiter. Among these were, extreme and persistent tachycardia, nervousness, muscular tremors, local paralysis, headache (particularly of the form of migraine), muscular pains, special affections of the senses (as deafness and tinnitus aurium), loss of the sense of smell, insomnia, and severe intestinal derangements (especially non-inflammatory diarrhea).

In the cases which he had collected he had been careful to exclude all hospital cases, as this was the most chronic of all diseases, and it was only in private practice that patients could be successfully followed up. In 28 out of 40 cases of which he had the histories, all of the symptoms which he had enumerated were met with, and the cases without goiter were on the whole the most severe. When the latter was present, it was found that the constitutional symptoms bore no relation whatever to the size of the goiter. As to the pathology of the disease, it appeared to him that for this we must look to toxins in the alimentary canal. Thus, he had known the tachycardia to be reduced by from 20 to 50 beats by a single dose of a mercurial. In any case where there is persistent tachycardia, without any inflammatory trouble, the probability is that it is one of Graves' disease. The thyroid gland is involved in only about one-half the cases. His own view was that one of the functions of the thyroid was to neutralize the poisonous materials generated in the gastro-intestinal tract, and that when these materials were in excess, a hypertrophy of the gland was liable to occur. Such hypertrophy, however, was not an essential characteristic.

Thyroid in Melancholia.—Dr. E. D. Fisher thought the various animal extracts acted in one way or another as stimulants and spoke particularly of the use of thyroid in poorly developed young children. As to the treatment of melancholia by thyroid, he said that in a hospital where this had been tried it was found that while sometimes there might be an evanescent improvement under the extract, the final results were entirely unsatisfactory. There was no pathology to this disease, he said, it was simply a mental condition. In myxedema and cretinism we knew the results.

Nutritional Disease of the Arteries.—There was a form of arterial disease, not dependent on well-recognized pathological conditions such as syphilis, Bright's disease, etc., in which anatomical changes were sometimes met with in the comparatively young. There were some changes going on (yet not endarteritis); some nutritional disease was present which made the man older than his years. In such cases we had the early breakdowns; neurasthenia or an apoplectic seizure might occur. It was in instances of this kind that he hoped that thyroid or other extract might prove successful in arresting the nutritional change. As to pituitary in the case of acromegaly, he could not say that this extract always gave results.

The Thymus and Bone Salts.—Dr. J. Leonard Corning felt that the suggestions brought forward in Dr. Osborne's paper were entirely rationally inspired, and should help on to fruitful results. That the thymus plays a part in the elaboration of the bone salts seems forcibly suggested by a comparison of the salts found with those freely distributed in the bones. The large percentage of related inorganic compounds found in the thymus tends to heighten the probability of this gland's agency in the preparation of the so-called bone salts. Moreover, the fatty degeneration and atrophy of the gland as puberty draws near, at a time when growth has already reached an advanced stage, tends still further to support the theory.

The Thyroid and Neurotic Conditions.—With regard to disturbance of the thyroid secretion as a possible source of hysterical and other neurotic derangements, he supposed that most had seen functional cases recalling in some of their features, at least, the mental and nervous disturbances of exophthalmic goiter, cases that had gone on to improvement, greater or less, under the exhibition of thyroid extract. But while this was true, there were others, differing, apparently, little, if at all, from these, that showed no such improvement. Both classes were to his mind significant. The first showed a distinct relation of cause and effect, while the second pointed to a defect rather of nosology than of theory. Then we had to consider the possible consequences of over-activity of the organ, a condition against which we should at present be able to bring little or nothing save the opiates.

The Physiological and Therapeutic Importance of the Suprarenal Glands.—The crucial observation of Brown-Séquard, in 1856, that ablation of the suprarenal glands in guinea-pigs and frogs is followed by lowering of the blood pressure and body temperature, progressive paralysis, and ultimate death, affords ample demonstration of the physiological significance of the gland. Add to this his further observation that animals so treated might by subcutaneous injections of extracts of the healthy gland be restored to a relatively normal condition, and so maintained for a considerable time, and we have the broadest kind of a hint as to the future therapeutics of the adrenal derivatives. With the improved chemistry of the drug, it has found favor with some in the management of cardiac weakness, edema of the lungs, and diabetes insipidus, not to mention hemorrhage, especially of gastric and pulmonary origin. Its hemostatic power is, indeed, one of its most significant and promising features. In view of its remarkable physiological importance, as shown by experiment, a still more extended application of the gland in the management of conditions due or largely due to circulatory insufficiency, seems altogether probable.

The Circulatory Effects of Thyroid and the Suprarenals.—Dr. Reynold W. Wilcox said that when the thyroid was ablated, death from shock might ensue. The reason for this Dr. Osborne had explained. Patients who have had this ablation done, and are fed thyroid, suffer from what may be called continued shock. Thyroid is a potent remedy, and when it is given its effects should be watched with the greatest care, as grave symptoms are liable to arise. The same is true

of suprarenal extract. Not excepting the barium salts, suprarenal is the most powerful vaso-constrictor which we possess. Its first and principal action is on the arteries. Secondarily it acts as a cardiac stimulant, but this effect is not produced for some time after it has powerfully constricted the vessels. It is sometimes given in acute emergencies in heart troubles; but from what has just been said, it can readily be seen that in such emergencies it is as dangerous as digitalis.

Mammary Extract for Regulating the Menstrual Flow.—In young girls, and especially chlorotic girls, Dr. Wilcox has found no remedy which so satisfactorily regulates the menstrual flow as mammary extract. It should be given for five or six days before the expected period. In anemic girls who flow profusely it is of great service.

The Subject as Yet in Its Infancy.—Dr. Austin Flint said that a few years ago little or nothing was known concerning the physiology of the ductless glands, and what knowledge we now possess has been derived very largely from the pathologist. He had been surprised and gratified at the wide range of matters connected with variations of the internal secretions, and their therapeutic applications, discussed in the paper. He could not but feel, however, a certain amount of incredulity in regard to positive practical results, as it seemed to him that this whole subject was as yet only in its infancy.

The Effects of Removal of the Thyroid.—Prof. Graham Lusk said that out of 60 dogs in which Schiff extirpated the thyroid, 59 died within four weeks. Kocher and Reverdin found changes resulting from such extirpation which corresponded with those described by Gull in 1873, and called myxedema. The effects of removal of the thyroid are as follows: (1) Emaciation, (2) myxedematous tissue. Mucin is found in the early stages in man and in the monkey. Later there occurs a hyperplasia of connective tissue, embryonic in character. The skin is hard, rough and dry, because there is no secretion. The hair becomes thin and grey, and falls out. (3) Abdominal vaso-dilation; fatty and colloidal degeneration of the liver and kidney; hyaline degeneration of the arterial walls. (All of the above phenomena are removed after feeding thyroid). (4) Metabolism abnormally low; subnormal temperature. The heat reduction is not due to circulatory changes. (5) Nerve and muscle disturbances. Fibrillary contractions occur; in monkeys clonic cramps and tetanic spasms. These are of central origin, and due to the action on the spinal cord. There is decrease in nerve activity, as shown in motor paralysis and anesthesia. The face loses its expression because the innervation of the muscles is interfered with. There are psychical disturbances, due to the action on the cerebral cortex; mental weakness, irritability, stupidity. (6) The pulse is unchanged in myxedema. If thyroid extract is fed, the pressure is lowered and arterial relaxation occurs. (7) Diuresis is produced.

SECTION ON CLINICAL MEDICINE AND SURGERY; MEDICO-CHIRURGICAL FACULTY OF MARYLAND.

Twelfth and Thirteenth Regular Meetings, held November 21 and December 5, 1902.

Two Cases of Brain Tumor with Report of the Eye Symptoms.—Drs. Chambers and H. Friedenwald reported these cases. The first patient was a female, thirty-five years old, with a history of syphilis 12 years ago. Six months before admission to the City Hospital in June, she commenced to have nausea and vomiting with dizziness and intense headache. Her sight had also been failing during this time. On examination she was found to have double choked disc and hemiopia on the right side. The field of vision was reduced. With the right eye she could count fingers at 2½ feet; with the left at 3½ feet. There was a sensitive area in the left occipital region. The diagnosis was made of tumor, possibly syphilitic, of the left occipital lobe, and mercury and the iodides were accordingly prescribed. No improvement was seen at the end of a month and the patient begged for further treatment. Her intelligence was fairly good at first, but grew progressively worse, so that on the day of operation it was hard to demonstrate the hemiopia. On June 22 Dr. Chambers operated and found a tumor too large for removal. He therefore drained off a large amount of cerebro-spinal fluid. In 24 hours there was great improvement. Intelligence returned and the patient became quite cheerful. The optic neuritis was also diminished. The patient lived until July 25 and suffered no pain during the four weeks after the operation. Before death intracranial pressure increased and caused a nystagmus. There was also right facial paralysis and herpes labialis. The patient died in delirium. The interesting feature of the case is not in the diagnosis nor in the operative procedure but in the microscopical appearance to be described.

The second patient was a male, whose mother, and others of his kindred, had been insane. Five years ago he was troubled with asthenopia and with myopic astigmatism. This was corrected, as was also a marked weakness of accommodation. The patient was very neurotic and was thrown into violent delirium by atropine. His vision was $^6/_9$ or less, never perfect and could not be corrected.

In March, 1902, he had severe pains in his right eye, which could not be explained. Sodium salicylate caused some improvement, but after a month the pains recurred and were accompanied by headache. After a trip to the country his vision was reduced to $^6/_{12}$ and $^6/_{18}$ and he had a typical form of hysterical amblyopia. The fields of vision were reduced to 10° and 15°. The color fields were also reduced. There was definite right optic neuritis, but the left optic nerve was normal and remained so. There was also corneal and facial anesthesia on the right side and the patient said he was anesthetic on the right side of his body. The ocular movements were good but the right eyelid closed only partly in blinking. The marked hysteria and an unilateral optic neuritis suggested orbital disease. This view was confirmed by the presence of orbital pain. However, the optic neuritis (right) steadily increased, paralysis of the right rectus came on, and all the other symptoms progressed till the patient's death, on September 15. The features in the case are (1) association of marked hysteria and hysterical vision with a cerebral tumor, (2) unilateral optic neuritis. Although such cases are reported, they are very rare and usually suggest orbital disease. The explanation is difficult. The neuritis was not of a high degree, but is merely a mild choked disc.

Dr. Chambers saw the first patient on June 22, when she had a very definite tender point in the occipital region. The skull was opened by a large horse-shoe flap. The dura was not adherent to the bone, although it was thick and adherent to the pia. The large, soft tumor mass lay directly below it. He saw the second patient in March, 1902, when he complained of pain in the legs, along both sciatic nerves. He probably had syphilis. The knee-reflexes were increased and there was no ankle clonus.

Exhibition of Specimens from the Above Cases.—Dr. McCleary exhibited these. *Case 1.*—The dura was adherent and there was a slight leptomeningitis; no evidence of syphilis was seen. The tumor was an eroding,

fungating mass, which perforated and spread out over the dura, and extended 5 cm. below the dura pressing on the middle occipital convolution of the brain, causing a cup-like depression therein. The pia was everywhere present between the tumor and the brain. There was much hemorrhage. Sections showed that the dura was not involved. On the surface of the tumor there were a few spicules of bone, and at the edges a good many giant cells arranged in a gridiron pattern, a result of irritation by the gauze drain, which was left in 10 days. The tumor is an endothelioma, originating in the endothelium of the subarachnoid spaces, the pia being quite free.

Case 2.—The second specimen is a pedunculated tumor, found at the base of the brain on the ventral surface of the pons, evidently starting from the pia. It was not adherent to the dura. The tumor, which measures 12.5 by 10.5 cm., caused a depression 3.5 by 1.5 cm. in the right side of the pons, displacing the anterior lobe of the cerebellum and extending on the middle cerebellar peduncle. The medulla was also displaced and there was pressure on the temporo-sphenoidal lobe. The tumor had a lamellated appearance. Microscopically it shows a connective tissue framework, containing endothelial cells in rows. It was probably an alveolar endothelial tumor of meningeal origin.

Dr. Deetjen exhibited four radiographs, made on two different occasions from the second case, and in each of these a triangular shadow was definitely made out at the point where the tumor was found.

Dr. F. X. Dercum of Philadelphia in opening the discussion said that when he saw the second of the above cases he presented the following symptom-complex: Headache, dizziness, epileptiform seizures, once with unconsciousness, pains in the thighs, especially over their anterior portions. Symptoms of coordination, more marked on the right. The right side was weaker. There was right-sided facial paresis, involving all the branches of the seventh nerve. The palpebral fissure was larger on the right, hypesthesia in the region of the superior and middle branches of the fifth nerve, hypesthesia of the right arm in its posterior and upper aspects, unilateral optic neuritis, paralysis of the external rectus, absence of Babinski's reflexes, exaggeration of the knee reflexes, the others being normal. Later on, taste was impaired on one side and there was indefinite hemianosmia. The interesting features of the case are extensive involvements of the cranial nerves.

He briefly reported four somewhat similar cases. The first was a female forty-one years old with headache, vomiting, dizziness, seizures, ataxia in the hands and arms, optic neuritis, especially on the right, lateral nystagmus, dilatation of the right pupil, paralysis of the superior and external recti, central deafness on the right, hypesthesia in the region of the middle and inferior branches of the right fifth nerve, Babinski's sign and the supra-orbital reflexes absent.

The second case was a male, twenty-six years, who had headache and vomiting, and had had one seizure. There was slight ataxia of the right extremities, optic neuritis in the left eye and to a slight degree in the right, contraction of the visual fields, paralysis of the right external rectus, hypesthesia in the middle and superior branches of the left fifth nerve, hypesthesia of portions of the right lower extremities, both localized and diffuse, paresis of the left side of the face, knee kicks normal or absent.

The third case was that of a male, twenty-nine years old, with headache, vomiting, dizziness, seizures, ataxia, weakness on the right side, double optic neuritis, nystagmus, hypesthesia of the superior and middle branches of the left fifth nerve, hypesthesia of part of the right lower extremity, the side opposite to that on which sensation was impaired in the face.

The fourth case was a female of fifty-one years, with headache, vomiting, seizures, ataxia, weakness on the right side, paresis of the right side of the face, hypesthesia of the right fifth nerve, especially in the mouth, transient hemianosmia, transient loss of taste and smell on the right side, no optic neuritis, contraction of visual fields, nystagmus and conjugate deviation to the right, right central deafness, absence of Babinski's and supra-orbital reflexes.

The second case was operated on by Dr. Keen recently. The skull was opened in the temporal region and the brain protruded excessively. It was incised and an intra-cerebral growth was found, extending downward and backward.

The fourth case was also operated on, a tumor, evidently of the pons, could be seen and felt, but could not be removed.

The ataxia and nystagmus must be due to pressure on the middle and superior cerebellar peduncles. The hemianosmia and hemianesthesia were due to differences in pressure. In Case I the voice became impaired on leaning forward. There was no twitching of the facial muscles in any case and weakness of the muscles of mastication was present in only one case. In two of my cases there was crossed hypesthesia of the lower extremities, due to the direction of the pressure. In the cases reported by Dr. Friedenwald the hypesthesia of the leg and face was on the same side.

To summarize the four cases, in addition to the usual headache, nausea, dizziness and seizures, there was ataxia in all the cases; hypesthesia in all; facial paresis in all; optic neuritis in all, three times unilateral; the vision was affected in all; there were ocular pareses in two; nystagmus in four; hypesthesia of the face in four, of the extremities in three; impairment of taste and smell in two. Knee reflexes exaggerated in two, diminished in one, varying in two. Central deafness in one, impairment of hearing in three.

The second tumor described by Drs. Chambers and Friedenwald explains the findings in the case exactly. In one of his cases the radiograph was successful. This is the one on which Dr. Keen operated. The shadow was situated like that in Dr. Deetjen's. The prognosis is bad, even with operative treatment, but the surgeon can now reach all parts of the cranium. In one case which he saw, Dr. Keen chiseled the temporal bone and put his finger into the foramen magnum.

Dr. Preston said that he saw the second case early in July, 1901. The eye-grounds were normal at that time. There was slight right-sided anesthesia, and slight mental and hysterical symptoms. The diagnosis lay between hysteria and brain tumor, although he was inclined to the former. In a case which occurred at the City Hospital five years ago, there was headache, a tendency to fall to the right, nausea and vomiting, slight mental symptoms, and hypesthesia of the fifth nerve. The diagnosis was made of ataxia and the involvement of the fifth nerve, of a tumor pressing on the cerebellar peduncles, the pons and the exit of the third nerve. The postmortem confirmed the diagnosis.

It seemed to him that operations are only justifiable (1) if there be localizing symptoms (2) for relief of pain and improvement of eyesight.

Dr. H. M. Thomas said that the unilateral optic neuritis which is so difficult to explain, usually, other things being equal, points to the presence of a tumor on the same side. He asked Dr. Dercum to explain the sensory disturbances on the same side as that of the tumor. In patients under his care who had double optic neuritis and central deafness, it would have been a great

comfort if we could have relieved at least the blindness. He would like to see an operation devised for the relief of intracranial pressure, but avoiding the hernia cerebri, which has been present in so many of his cases.

Dr. Cushing said that multiple paralyses of the cranial nerves are not uncommon (See Bastian, *British Medical Journal*, 1893). In one of his cases there was paralysis of the third, fourth, fifth, seventh, eighth and twelfth nerves on the right, as well as of all the muscles controlled by the fifth on the right side. Diagnosis was made of a tumor near the Gasserian ganglion. The growth was found at operation and easily removed. Two weeks later the lower part of the tumor was removed. The pain is again returning in the face and the patient is blind in one eye.

There are two groups of symptoms in cases of brain tumor (*a*) the great triad, (*b*) the localizing superstructure of symptoms. Dr. Fitz has recently said that mere prolongation of life by surgical intervention is not justifiable, unless there be relief of symptoms. In the first case reported by Dr. Friedenwald there was certainly an advantage in operation. If there be no localizing symptoms, operation may still be justifiable, the opening being made preferably in the cerebellar region, because death is most often due to pressure on the medulla and will be less likely to occur if the opening is in that vicinity. The operation should be undertaken to free the patient from his symptoms. Wound may be closed without drainage. Sänger of Hamburg reports a large number of cases from neurological standpoint and advocates palliative operations.

Dr. Dercum said, in conclusion, that of the cases which were operated on and in which no tumor was found, some were relieved and others, perhaps a larger number, went from bad to worse. Further, that the contraction of the visual field was probably not a hysterical manifestation, but due to pressure on the second nerve.

Portions of Stomach Tube Removed by Gastrotomy.—Dr. Julius Friedenwald showed portions of two tubes removed by operation from one patient by Dr. Finney and from another by Dr. Harris. No previous cases have been found on record in which fragments of tube were thus removed from the stomach. In one case reported by Leube, the tube had been swallowed and could be palpated in the stomach. It caused considerable fever and was suddenly vomited up one day, the patient feeling something in the throat and being able to grasp it with the fingers.

Dr. Finney remarked that he had done gastrotomy for foreign bodies four times, twice for peach stones lodged low in the esophagus and once for false teeth, in addition to the present instance. All the cases recovered promptly except in one of those in which a peach stone had been swallowed and where there developed a mediastinal abscess, it being impossible to say whether the abscess was due to the stone or to the effort to remove it. The abscess was readily drained by resection of a rib. The operation is practically without mortality.

Orthostatic Albuminuria with the Report of a Case.—Dr. Beck reported a case of a male, twenty-five years old, a cigarmaker, of a nervous and weak constitution. His father died of apoplexy. The patient has had diphtheria and nervous dyspepsia. For the past five years his work has kept him indoors. Alcohol and tobacco are used moderately. No history of syphilis. The patient is a sexual neurasthenic and has had a good deal of vertigo and palpitation. On being examined for life insurance, albumin was found in his urine and he was treated for seven months without benefit.

When first seen on May 15 his weight was 137 pounds, he was pale, of a sallow complexion and quite nervous. The chest and abdomen presented nothing abnormal but the patient had symptoms of hyperacidity and constipation. Examination of the nervous system showed that his sensations were impaired. There was paresthesia in the lower abdomen and legs and the tendon reflexes were diminished. Red blood count was 4,000,000. Urination was accompanied by burning and the urine, of which two liters were passed in 24 hours, had a specific gravity of 1.030, contained 0.7 per cent. albumin and a few hyaline casts and pus cells. This was after moderate exercise. On the following day two specimens were examined. The morning specimen was free from albumin. The evening specimen, examined after the patient had been standing half an hour, contained 0.1 per cent. of albumin. After sitting for two hours the urine was again free from albumin. The same result was obtained on repeated examination of specimens. Outdoor life was prescribed under restricted proteid diet. He was also given tincture of nux vomica and syr. hypophosph. comp. After a month there was decided gain in the patient's general condition, but after standing an hour there was still 0.1 per cent. of albumin present. Hot and cold sponges and douches were now added to the treatment.

One month later the patient complained of fulness in the epigastrium. A test meal showed a total acidity of 80. The gastric distress was relieved by lavage. The patient has recently been seen and is practically cured of his trouble.

Of the 36 specimens of his urine examined, the average specific gravity was 1.026. The urea averaged 2.45 per cent. Albumin was present in twelve of the specimens.

In a recent Paris thesis, by Dr. Walter Vire, this form of albuminuria, due to standing, is fully discussed. It occurs in young people without renal disease and was discovered by accident. No functional disorder could cause it. The prognosis is good. It is evidently due to fluctuation in the circulation of the kidney, probably to a vasomotor disturbance of the renal circulation. It is usually seen in nervous persons.

Dr. Osler said that the reciprocal relations of neurasthenia and albuminuria are interesting. Transient albuminuria is frequently present in neurasthenics and neurasthenia is often a consequence of albuminuria. In one case in this city, five minutes in an erect posture causes a trace of albumin in the urine. Even to sit up and eat breakfast in bed would cause the albumin to appear. We lay far too much stress on the mere presence of albumin in the urine when we should pay attention to the casts, the specific gravity, the state of the arteries and the pulse.

Dr. Pancoast said that a series of cases of postural albuminuria was recently published by the late Dr. Hugee in which he showed that the renal circulation was fluctuating in certain cases. In Dr. Beck's case, albumin disappeared on sitting down and its presence was therefore evidently not altogether due to posture.

The Surgical Treatment of Facial Paralysis by Nerve Anastomoses.—Dr. Cushing said that no injury of peripheral nerves is as distressing as that of the seventh cranial. It was known long ago that anastomoses could be made between nerves of similar character. Even the sympathetic and vagus have been anastomosed and the peripheral portion of the vagus has taken up the peripheral work of the sympathetic. In 1898 Dr. Foa, at the suggestion of his assistant attempted to suture the spinal accessory into the peripheral portion of the facial nerve, but was unsuccessful. Ciarelli, an Italian surgeon, did the same thing. Kennedy, in England, in a case of facial ataxia, divided the seventh nerve and sutured to it part of the eleventh. The patient made a good recovery.

The present case is a male, sent from Elkton with a

gun-shot wound in the mastoid process. The inner ear was destroyed. The blood was removed from the base of the skull. Six weeks after the injury an incision was made along the anterior border of the sterno-mastoid, the muscle was retracted, the eleventh nerve was divided, turned upward and sutured into the peripheral end of the divided seventh nerve. Recovery was rapid and the patient first found that he could work his facial muscles by elevating his shoulder. He can now work them freely, independent of the shoulder, can close his eyes, and coordinate fairly well, although it is not easy to understand how he does this. If the cell-bodies of the nerves atrophy when their peripheral portions are destroyed, then the central portion of the seventh should have atrophied. The impulses probably travel, however, by commissural fibers passing between the centers of the seventh and eleventh nerves, thus bringing about coordination. The chief points to be observed in the technic of the operation is to avoid the handling of the nerves and avoid scar tissue. In proportion as scar tissue is avoided, the result is improved.

Tuberculous Pericarditis.—Dr. Thayer reported a case of a male, thirty years old, a painter. Four months ago he had pleurisy without effusion on the left side, with pain and dyspnea. Two weeks ago he had pain in front of his chest, became faint and could not work. His dyspnea increased and there was slight swelling of the feet. The pulse is small and irregular. The precordium is bulging, dulness extending from the right nipple to the left axilla. There is also a large area of flatness. The left lung is tympanitic throughout; there are a few râles at the apex. The heart sounds are distant, nothing is heard below the fifth rib. Aspiration was done, the needle being inserted two to three cm. inside the nipple line, and 1,250 cc. of fluid came out under pressure. During the tapping dyspnea disappeared, cardiac flatness returned to normal but the triangular area of dulness remained. This was the condition on October 31. When seen two weeks ago the patient's apex impulse was distinctly visible and there was no Broadbent's sign. The features of the case are (1) the amount of the effusion, (2) the rapid recovery.

In one of his cases, 900 cc. were removed at each of two aspirations and later 4,000 cc. at the autopsy. In making the diagnosis Rotch's sign is to be noted, *i.e.*, the flatness to the right of the sternum in the fifth interspace. Ewart's sign depends on the relative cardiac dulness and consists in a change in the angle between the heart and the liver, the usual acute angle becoming obtuse. There is but little danger of perforating the heart during aspiration. This has only been reported twice. If pus be present, incision and drainage must be done.

Dr. Osler said in a large number of cases which came to autopsy it was seen that the greatest bulging in pericarditis was in the left costo-xiphoid angle. In one of his patients, a colored male, aspiration was done three times and tubercle bacilli were found in the fluid.

Dr. N. B. Foster briefly reviewed the 18 cases which had come to autopsy at the Johns Hopkins Hospital. Thirteen of these were adults between fifty and eighty years of age. Infection almost always occurred by contiguity with the lungs and pleuræ or the bronchial glands. There was frequent association with Pott's disease.

NORTH BRANCH OF THE PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, December 8, 1902.

Dr. H. Brooker Mills, in the Chair.

Dr. George G. Ross read a paper entitled "Some Experiences with the X-ray as a Therapeutic Agent." This paper will appear in a subsequent issue of the MEDICAL NEWS.

Dr. William S. Newcomet presented three cases which had been treated by the X-rays. The first was an extensive epithelioma of the orbit and had been healed for about nine months; the patient's eye was gone and considerable bone had been lost from the frontal and nasal bones, and this case he felt was an illustration that some of the cases of malignant disease would heal under this treatment, even after there had been extensive necrosis. The other two cases were carcinomas of the breast, both inoperable, and have been doing well under treatment. In regard to the hazard, of this form of treatment, he rather felt that it had been overdrawn, and believed that the remedy, if properly managed, would afford a very efficient mode of relief, even in those cases where a cure could not be expected. In a series of 24 cases, he had attained the following results: Epitheliomas, surface, 4 cured; breast carcinomas, 2 cured; breast carcinomas, decided improvement in 2; epitheliomas, surface, decided improvement in 1; epithelioma of the uterus, pain controlled and apparent improvement in 2; recurrent sarcoma, pain controlled and apparent improvement in 1; carcinomas of the breast, pain controlled and apparent improvement in 2; doubtful effect in 4; no effect in 6.

In the last two groups were included people who left while under treatment; one died about two weeks after he commenced treatment. No selection was made of cases, and all that came under the notice of the speaker were treated. Improvement in the uterine cases and breast cases was due to the control of the hemorrhage, and he stated that when the breast case which he had just presented came under treatment she was very weak, with a pulse of about 130 to 140 and with a temperature of from 99° to 101° F. The uterine cases were exposed both in the knee-chest position and through the abdomen. In regard to osteosarcomas, he stated that he had seen two cases, neither of which improved.

In regard to the effect of the X-ray he felt that its effect upon a malignant process might be likened to a given force upon a well-organized army and a mob. The X-ray will do great harm to the healthy parts, but the resistance of the healthy cell is greater, through its nerve and blood supply than the growth, therefore, the disorganized mass must undergo degeneration before the surrounding healthy structures.

X-ray in Epithelioma.—Dr. Jay F. Schamberg stated that it was principally in the epithelioma of the skin that the X-ray had been employed in dermatology. The majority of the cases of benign disease of the skin, he felt did not usually tend to large tissue destruction, involve but a small space, do not lead to mediastasis, and can generally be cured by the application of arsenic paste and similar remedies. He felt that it was particularly valuable in cases of deep rodent ulcer, which frequently involves such regions, as the nose, eyelids and orbit, in tuberculous conditions of the skin, lupus and other affections which have a tendency to long persistence and ultimate ulceration. In carcinoma it possesses advantages over all other remedies in that it does not sacrifice the healthy skin and is painless. It is a minor procedure as compared with radical operation and for this reason it can often be employed in timid patients, or in regions where surgical relief would be impossible. Recurrences have occurred in about 50 per cent. of these cases which had been observed, and the same treatment was then administered as in the primary attack.

For the removal of excessive hair growths good results have been secured, and one German observer claims

to have treated 44 cases, which were permanently cured, but these results have not been borne out by other observers, and one case is reported by two French observers, where the absence of hair removed from a guinea-pig in this manner lasted eighteen months and then returned.

The use of the X-ray for the removal of birthmarks was referred to and the case was reported of a man aged twenty-two years, suffering from a naevus angiotosis, involving the entire left side of the face, in which the application of the X-ray was followed by severe dermatitis, loss of the epidermis and pustulation. It left practically no scar and at the end was almost indistinguishable. In the treatment of eczema, acne and psoriasis favorable results have been reported, although Pusey of Chicago states that recurrences are frequent where the seat of the disease is a hair follicle or sweat gland.

In the matter of the therapeutic value of this remedy he felt that it was still in an experimental stage and that there were undoubtedly a great many cases which terminated unfavorably which were not reported. Its use is not unattended by danger and even with the greatest care in regulating the distance of the patient and the character of the application, dermatitis and sloughing will sometimes result.

Dr. William M. Sweet stated that most of the cases in which he had employed the X-rays had been cases of epithelioma around the face, particularly around the eyelids. The first ten applications he usually administers daily, after that reduces them to once a week or more according to circumstances. A case of epithelioma of the eye, which extended across the nose and into the orbit occurring in a lady thirty-three years of age, was reported, in which, under treatment by the X-ray, the internal form of the disease entirely disappeared, although there were still some present in the orbit. Another case referred to was that of a man in which the epithelioma extended over the entire side of the face. The disease was of fifteen years' duration, and after 2½ months' treatment contracted one-half. In the more extensive epitheliomas of the orbit, it was observed that after the treatment had been administered for some time that there was an extensive leucocytosis present, and he believed that the application of the X-rays produces atrophic changes in the cells. In the treatment of conditions involving the face, the X-rays present that advantage that they can be administered in regions surgically inaccessible, they do not leave much of a scar and if the case recurs they can be again employed.

Dr. G. E. Pfahler stated that he had treated in all about fifty cases of malignant growths by means of the X-ray, consisting of carcinomata of the skin, carcinomata of different parts of the body, including the uterus, tuberculosis of the skin and psoriasis, and in all cases beneficial results had been secured. He reported one case of carcinoma of the uterus which was exposed both through the vagina and through the abdomen, in which the woman recovered sufficiently to be able to scrub around the wards of the hospital, and he believed would have been entirely cured had she continued under treatment. In another case of carcinoma of the uterus, the case was apparently cured, but died a short time later, and necropsy revealed an enlarged gland in the axilla. In the treatment of the uterine carcinoma he had carefully protected the surrounding parts, and he felt that this case clearly portrayed the necessity for the treatment of the surrounding glands. In cases of large tumor of the breast or very extensive tumor of the uterus, he felt that it would be better to remove the major portion of the growth by surgical means and then follow this up by the X-ray treatment, and in all cases, he recommended a few applications of the X-ray prior to surgical intervention. In the treatment of the deeper carcinomata, he felt that the carrying off of the degenerated cells through the system might tend to produce toxemia and account for some of the cases of septicemia following these conditions, but he felt that this danger was more than counterbalanced by the relief afforded.

Dr. Mihran K. Kassabian recommended the protection of the healthy tissue by a lead sheet during the operation, the hole in which should, however, be somewhat larger than the diseased area in order that the surrounding tissue may be treated. The exposure he thought should be given every day for about six or seven minutes during the first week, the next two weeks the length of each treatment should be somewhat decreased and during the following week it should be discontinued in order to observe the effect produced. The production of dermatitis he felt was unnecessary, as he believed that resulted from too constant and too strong an application of the rays. In cancer of the deeper structures he felt that introduction by means of a vaginal tube was unnecessary and in many cases he administers the X-rays without the removal of the clothing. He reported a case of carcinoma in which the pain had entirely disappeared after two weeks' treatment.

Physiological Action of X-rays.—Dr. Charles Lester Leonard directed his remarks to the physiological action of the X-rays, and stated that it had been proven that actual degenerative changes take place under the influence of this agent, the action seeming to be of a neurotrophic character. Pathological examinations have revealed the fact that the X-rays produce an analgesic action, in addition to which there is an alterative effect, fatty degeneration and metamorphosis. The various steps he believed to be: first, a degeneration, producing a certain amount of deterioration which is followed by sloughing, breaking down and liquefaction, and herein lies the danger in producing too sudden and too marked a change where the growth is located in the deeper structures which cannot be adequately drained, the tissues being at first stimulated, but later becoming devitalized under the influence of the toxic substances? Three cases were reported, the first a case of scirrhus, which was so completely cured that it was almost impossible to detect the presence of malignant tissue; the second was replaced by healthy tissue; the third was a case of cancer seven inches in diameter, which under this treatment decreased over two inches in size.

Dr. John B. Shober referred to the importance of the preservation of accurate records and careful comparison of cases by the various workers in this line, and suggested as an appropriate method of recording the cases, the making of plaster of Paris casts and photographs of the growth, prior to and at intervals during the treatment. Where the cancer occurs low down in the uterus or cervix, he believed that good results should be obtained by the administration of the rays through the vagina by means of a tube or speculum.

Dr. W. Duffield Robinson referred to the case of a man suffering from eczema of the forehead and elbow of several years' duration, the spot on the elbow measuring about 2¼ x 3½ inches. The use of the X-ray was commenced, the first treatment being given for about six minutes with the tube at the distance of about six inches, and at the end of a week had apparently produced no effect, when a similar treatment was given, which was followed at the end of the second week by

a marked dermatitis and sloughing extending about 1½ inches around each spot, which condition of the forehead subsided in about three weeks, at which time the eczema was gone and has continued absent ever since, a period of about two years. The inflammatory condition of the arm continued, increasing rapidly in size and, although local treatment was employed, became so bad that amputation was advised but the condition finally yielded to local treatment.

Dr. A. G. Ellis stated that he had made pathological observations in four cases and in none of them had there been a tendency to leucocytosis nor a collection of polymorphic leucocytes. In some there was a small area of lymphocytosis, probably one-half of the number after the exposure that there was before. In a case of carcinoma of the breast, about the size of an egg, the rays were applied through a lead sheet with a hole like a half moon, about one-half of the size of the growth. After four applications of ten minutes each, the tumor was noticed to be decidedly spongy at the seat of the application, and after eight exposures the whole tumor, as well as some of the axillary glands were removed. Examination showed a small tumor, about one-half an inch in the smallest diameter, containing a small amount of fluid resembling serous pus, in which was floating a number of large cells almost entirely filled with fat. The surrounding tissue was very fat with some evidence of necrosis. Subsequently the granular change became more marked, and the nuclei became less, although examination of the surrounding areas showed it to be a typical scirrhus. In the other cases observed similar results were noted.

Dr. George G. Ross, in closing, referred to a case reported by Dr. Coley of New York, which had recurred six times following operation, and which was entirely cured by the X-ray. In regard to osteosarcoma, while he did not believe the rays had any effect on the progress of the growth or the ultimate outcome of the disease, he felt that the relief from pain afforded by their use was sufficient to justify their continued application.

The "Proper Recognition of Electrotherapeutics" was the title of a paper read by Dr. A. E. Rainear, in which he referred to the great progress made in this direction during the last decade, and especially to the work of Professor Roentgen. Where electricity was formerly empyrically employed, its use is now based upon certain well-known laws and principles. The use of cataphoresis and electrolysis in the treatment of abnormal growths, and of the X-ray as a diagnostic assistant were commented upon, and the writer believed that the greater percentage of neurotic and neuro-muscular ailments could be cured by these agents, and that there was a wide field in gynecology for its employment. Regret was expressed at the small attention that has been paid to this subject in the curriculum of the average medical school as it was believed that in order to secure favorable results, the electrotherapist must be thoroughly trained in this line of work.

Dr. G. Betton Massey felt that too little attention was devoted to electrotherapy at the present time, and believed that their use should be increased particularly in gynecology. He urged the general practitioners to perfect themselves in the knowledge of the galvanic and faradic currents, and stated that he felt better and quicker results in the treatment of malignant growths could be obtained by the employment of cataphoresis than by the X-ray. The recent advances that had been made by Finsen and others in the therapy of light were also of great moment and should be energetically followed up and careful records made of all obstinate and chronic cases.

BOOK REVIEWS.

DISEASES OF THE RECTUM AND ANUS. Designed for Students and Practitioners of Medicine. By SAMUEL GOODWIN GANT, M.D., LL.D., Professor of Rectal and Anal Surgery at the New York Post-Graduate Medical School and Hospital, etc. Second Edition. F. A. Davis Company, Philadelphia.

THE second edition of this work contains so many additions to the previous volume, and several of the chapters have been so entirely rewritten and extended on account of the advances which have been made in the domain of rectal surgery that the present volume may be considered practically a new work. Among the additional subjects treated upon may be mentioned, "Diseases, Injuries and Tumors of the Coccy;" "Venereal Diseases of the Ano-rectal Region;" and "Recto-colonic Enteroliths and Concretions." Special attention should be called to the numerous new and original illustrations which elucidate the text most admirably and which alone make it a valuable treatise for one to whom the diagnosis and the details of treatment are important subjects. The chapter on "Auto-intoxication and Auto-infection" does not perhaps express the latest views upon the chemical processes which underlie these conditions and upon which so much work has recently been done by the physiologic chemists but it does at least call attention to the importance of this subject which lies perhaps more within the domain of the physician than the surgeon. A chapter on "Railroading as an Etiological Factor in Rectal Diseases," is both interesting and useful and serves to completely cover the subject of the volume from every standpoint.

BIOCHEMISCHES CENTRALBLATT. Vollständiges Sammelorgan für die Grenzgebiete der Medicin und Chemie, unter Leitung von P. Ehlich, E. Fischer, A. Kossel, O. Liebreich, F. Müller, B. Proskauer, E. Salkowski und N. Zuntz, herausgegeben von Dr. phil. et med. CARL OPPENHEIMER. Verlag von Gebrüder Borntträger, Berlin. Bd. 1, No. 1, Dec. 15, 1902.

THE array of distinguished names that greets the reader on glancing at the title-page of this new *Centralblatt*, is not the least important feature of this latest addition to the periodical literature of scientific research. The various forms of the *Centralblatt* covering the domains of Physiology, Medicine, Pediatrics, etc., fill an urgent want; they afford a bird's-eye view of the entire literature of their respective subjects. The *Biochemisches Centralblatt* is the youngest member of this important series. It covers the broad domain of the chemical investigation of vital phenomena. The subject-matter includes the following: Selected reports of practical value to medicine from pure, physical and applied chemistry and from plant-physiology; physiological chemistry in the restricted sense (the bodily constituents and their derivatives); chemistry of the tissues and organs under normal and pathological conditions; histological chemistry, including that of staining agents; the chemistry of digestion secretion and excretion, of metabolism and of the blood; ferments and fermentative processes and non-bacterial toxins; the chemistry of the pathogenic micro-organisms (toxins, antitoxins), the phenomena of immunity; toxicology and pharmacology, hygienic chemistry, disinfection and water-analysis.

The above enumeration of the multitude of subjects with which chemistry is vitally concerned, can not fail to impress one with the eminent value of a periodical like this. The growing importance of chemistry in all the branches of practical medicine is realized more and more as one wishes to reduce the art of healing to a

rational basis. The newly-developed physical chemistry and the study of the ferments, are throwing floods of light upon many obscure physiological problems. As an example of the trend of modern investigation in biochemistry it will suffice to mention a few topics abstracted in the initial number of this new periodical. The constitution of the proteid molecule is still engaging the attention of many physiological chemists. Thus E. Fischer and E. Abderhalden, in the study of the hydrolysis of oxyhemoglobin find that a-pyrrolidin carbonic acid, alanin and phenylalanin are regular constituents of the proteid molecule. This subject is also approached by E. P. Pick from the standpoint of the split-products of the peptic digestion of fibrin; he finds that thioalbumose is the carrier of the cystin group, glycoalbumose of the carbohydrate group, while albumose bIII, peptomelanin and protoalbumose are distinguished by their rich content in aromatic bodies. A. Gautier has found arsenic normally in the thyroid gland as well as in the thymus, the skin and its adnexa. A. Oswald shows that the iodine content of goiters is extremely variable, sometimes greater than in the normal gland, sometimes less; the amount of colloid and that of iodine rise and fall in a corresponding ratio. Another subject of absorbing interest is that of the melanins. Lodz Helman found that in the majority of melanotic tumors investigated, glycogen could not be detected.

In conclusion, there is no doubt that the success of the *Biochemisches Centralblatt* is assured. He who would keep abreast of the enormous literature of biological chemistry will find this an invaluable guide.

A NURSE'S GUIDE FOR THE OPERATING ROOM. By NICHOLAS SENN, M.D., PhD., LL.D., C.M., Professor of Surgery, Rush Medical College, in Affiliation with the University of Chicago; Attending Surgeon to the Presbyterian Hospital; Surgeon-in-Chief St. Joseph's Hospital, etc. W. T. Keener & Co., Chicago, Ill.

THIS is an admirable little volume subserving exactly the purposes for which it is intended. The author's characteristic conciseness and clearness of expression are well shown throughout its pages and the somewhat difficult mean between too much and too little in a book intended, as this is, for nurses has been carefully preserved. The topics discussed cover such important subjects as the preparation of an operating room in a private house; the preparation of the patient for major and minor operations; anesthesia, general, local and spinal; intravenous infusion; drainage; sterilization and disinfection of the hands, instruments and suture material; metric data and the preparation of the solutions used in surgery; the preparation of dressing materials, the after-treatment of laparotomy patients; shock, hemorrhage and peritonitis, etc. All of the common operations are then taken up seriatim and a list of the instruments, dressings, etc., required for each is given in tabular form. Nearly all instruments mentioned are figured so that familiarity with their names may be acquired. Although of course such lists are apt to require modification to bring them into accord with the methods of any particular operator, still very little fault can be found with those here given. The author's wide experience not only in hospital but also in emergency and military surgery has taught him many practical points which he has embodied in this manual and which make its perusal well worth the while of any one having to do with surgical work.

Few sins of omission are to be noted, though inasmuch as directions for the preparations to be made for the application of a Sayre's jacket and Senn's fixation splint are given it seems strange that a few more words on the application of plaster bandages in general and such common dressings as Buck's extension are not added. The addition of sodium carbonate to the water in which silkworm gut is boiled, as recommended on page 42, is not advisable as it tends to cause the material to swell. Such are but minor points, however, and as a whole the little volume deserves a wide popularity.

DIE RÖNTGENSTRAHLEN IM DIENSTE DER CHIRURGIE. Von Dr. CARL BECK, Professor der Chirurgie, New York. Verlagsbuchhandlung Seitz & Schauer. München.

THE eminence of the author in the field of surgery indicated by the title of his work and the very numerous contributions he has already made to the literature of the subject lead us to consider the present volume with more than usual interest. Even a cursory examination is sufficient to show its importance and value and the results of the ripe experience it embodies render its perusal almost indispensable to any one working along similar lines. Added to the intrinsic value of the letter press is the sparkling, almost epigrammatic, brilliancy of the author's style which lends a charm to his writings possessed by but few professional dissertations.

The work is divided into two volumes and three sections. The first volume contains, first, a general section in which the significance of the Röntgen ray, the apparatus needed and the technic of its application are considered. This is the one disappointing portion of the book and a fuller exposition of the technical details of which the author is master would no doubt be appreciated by many readers. In spite of the numerous later types on the market the author still prefers the Edison transformer, while water-cooler tubes are said to be open to the objection of a greater tendency to produce dermatitis. The term "radiograph" is considered a solecism and not to be employed in place of "skiagraph."

The second section of the volume takes up the body, region by region, and describes the conditions susceptible of diagnosis or treatment by the rays and is masterly in matter and manner. The second volume is a portfolio holding sixty odd reproductions of skiagraphs which for the most part are above praise. A few are somewhat lacking in clearness but altogether they form a most instructive collection and bear eloquent testimony both to the author's technical skill and his wealth of clinical material.

In closing it may be permitted to make two slight criticisms, one that the tone of the author's writing makes the treatment of fractures, given the Röntgen ray, seem mere child's play, and the other that the addition of an index would have added greatly to the value of the book.

THE TREATMENT OF FRACTURES. By CHARLES LOCKE SCUDDER, M.D., Assistant in Clinical and Operative Surgery, Harvard University Medical School, Surgeon to the Out-Patient Department, Massachusetts General Hospital. Third Edition. W. B. Saunders & Company, Philadelphia and London.

WHEN the preceding edition of this volume was discussed in these pages rapid and great success was predicted for it. The prompt appearance of a third edition shows the popularity the work has attained and in its present form it should prove still more acceptable. Several new but not uncommon fractures are described and a chapter on gunshot fractures of the long bones is added. The recent wars in various countries have furnished much material for the study of this brand of the subject which the application of the Röntgen ray has shown in literally and figuratively a new light.

Further improvements are a great expansion of the index which now is very full and the addition of about thirty-five new illustrations, while some of the old ones have been replaced by photographs.